California Boating

A Course for Safe Boating

BOAT SMART

California Department of Boating and Waterways

2001/2002 Edition

To The California Boater:

The home study boating safety course you are about to embark upon is provided by the California Department of Boating and Waterways. This course will assist you in understanding the basics of boating, from selecting a boat to knowing the "rules of the road."

I would like to bring to your attention some recent California boating laws that are intended to make our waterways safer places to recreate. These laws became effective January 1, 2001.

- Children **under the age of 12** must wear a life jacket when aboard an underway vessel 26 ft. in length or less.
- Every person on board a personal watercraft (PWC) and any person on water skies, an aquaplane, or similar device must wear a Coast Guard-approved Type I, II, III, or V life jacket (with exceptions).
- Any person convicted of one moving violation, as specified, while operating a vessel shall be ordered by the court to **complete and pass** a boating safety course approved by the Department of Boating and Waterways.

This home study course is on the list of those approved by the Department and accepted for court ordered requirements. A complete list of acceptable courses can be obtained by contacting the Department.

The Department is proud to serve California boaters by providing a variety of programs and services and protecting their interests. If you have any suggestions or comments about our boating programs or any other boating issues, please feel free to contact us by phone at (888) 326-2822 or on the Internet at www.dbw.ca.gov. Thank you for your interest in boating education.

Sincerely,

Raynor Tsuneyoshi

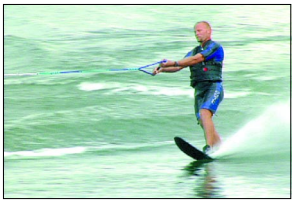
Director

California Department of Boating and Waterways
(888) 326-2822
Visit our Website:
www.dbw.ca.gov

Contents approved by the National Association of State Boating Law Administrators and recognized by the United States Coast Guard.

Introduction

Hear That? The Water's Calling You!



No matter where you are in California, a water adventure awaits you — each one as big and unique as the state itself.

It can be as majestic as paddling a kayak around San Francisco Bay within view of the Golden Gate Bridge. Or as heart-thumping as riding the raging flows of the Lower Kern.

You can canoe the quiet might of the lower American River in fall, or fish the mountain splendor of Lake Almanor. Something wilder? Make waves on a personal watercraft at Lake Perris. Getting away? Set sail with friends on the crystal Pacific out of Mission Bay.

So many adventures — all a lot more fun for you and everyone else when you learn how to boat safely and confidently, and prevent accidents. This course will cover the basics to show you how.

PLAY IT SAFE

Almost one million pleasure craft are registered in California and the number grows every year. That's a lot of Californians having a lot of adventures.

Unfortunately, many boaters will get hurt. The Coast Guard reports about 7,000 boating accidents each year in the United States — causing nearly 800 deaths, thousands of injuries and over $25 million damage.

The good news — boaters can prevent many of these accidents when they learn safety and use common sense.

WHAT YOU'LL LEARN

This course will teach you:

- Personal safety
- Basic boating guidelines
- Boating law and rules of the road
- Basic operation of a variety of vessels
- Accident prevention and rescue

You'll also develop the skills and knowledge to make the most of your adventure on California's waterways. Who knows? You may even make boating your career.

Playing it safe doesn't make you a wimp. Your boating adventures will be thrilling enough without the fear of not knowing how to prevent accidents.

Table of Contents

Chapter 1

PERSONAL SAFETY

Introduction

You're the most important part of safe boating. To be safe — and to make sure the people who boat with you are safe — you must think clearly, be polite to other boaters, and be ready for any dangers so you can prevent accidents. You need to know the information in this chapter whenever you play, live or work near the water.

OBJECTIVES

You will learn:

- How to keep from getting hurt by harsh weather, such as hot sun, heavy storms and freezing water
- How alcohol and drugs can make it dangerous to operate a boat.
- How to use different types of Personal Flotation Devices (PFDs), such as life jackets

Personal Safety

Learn to Swim and Float

You should learn how to swim and handle a boat so you can be safe in the water. These skills will help save yourself and others from danger. You should be able to swim at least 100 yards. And you should be able to tread water for five minutes. If you don't know how, or want to be a better swimmer, call your local recreation center or YMCA for swimming lessons.

Things that Can Affect Your Judgment, Health, and Safety

There are many natural stressors that make boating unsafe. They include strong wind, high waves, boat motion, loud noises, and the heat and glare of the sun. Drugs and alcohol also affect your judgment, health, and safety.

All of these stressors can:

- ✔ Make you tired
- ✔ Make you slow to act in case of danger
- ✔ Put you in danger from many things, including bad sunburn and boat crashes.

Here's how you can limit the effects of stressors:

- ✔ Avoid boating during a storm.
- ✔ Drink water.
- ✔ Eat energy foods, such as fruit or energy bars.
- ✔ Get a lot of rest and take many breaks.
- ✔ Wear sunglasses, sunscreen, a hat and proper clothing.

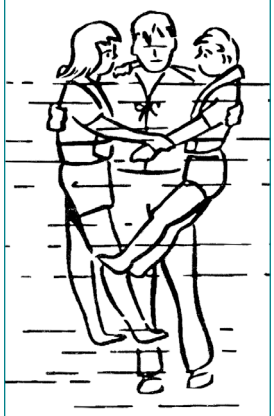
WIND AND WAVES

Wind and waves can cause motion sickness, which can make you sweat, get dizzy, get sick to your stomach — and even make you throw up. These will all affect your judgment and ability to act in any situation. You can reduce your chances of getting motion sickness by getting a good night's sleep, drinking a lot of water, and taking motion sickness medicine. (You can find these medicines on the shelves at drug and grocery stores. You must read the label directions carefully.)

TEMPERATURE

Very high and low temperatures can affect your judgment and may cause serious injury or illness. When temperatures are high, you can get **hyper**thermia (also called heat exhaustion), which happens when your body can no longer cool itself. In very low temperatures, such as when you accidentally fall into cold water, you can get **hypo**thermia, which is when your body loses more heat than it can produce. You can treat hyperthermia and hypothermia more easily if you know how to spot the early symptoms. Get first aid help as soon as you can.

HELP Positions



OR SEE WEB SITE:

www.dbw.ca.gov/resourc.htm

and click on "safe survival"

- ✔ Early symptoms of **hyper**thermia (heat exhaustion) include weakness, pale skin, headache, and heavy sweating. If the victim is not treated, his or her skin will become hot and bright red. The victim stops sweating and then loses consciousness or suffers from heat stroke. Heat stroke victims will often talk nonsense or see imaginary things.
- ✔ Avoid **hyper**thermia by avoiding long, direct exposure to heat and sun. When possible, spend time in a cooler location and be sure to drink a lot of water to keep your fluid levels up. Avoid liquids that make you urinate frequently, such as caffeinated sodas, coffee, tea or alcohol — these drinks will lower your fluid levels.
- ✔ You can reverse **hyper**thermia several ways… by getting the victim out of the sun into a cool place… providing fluids (but not alcohol or caffeine)… having the victim shower, bathe or sponge off with cool water… and urging the victim to lie down and rest in a cool place.
- ✔ Early symptoms of **hypo**thermia include feeling cold, shivering, losing your sense of balance, and feeling tired or ill. In severe cases the victim may fight, quarrel, or appear to be drunk. If the victim is not treated, he or she will shiver violently, have a high heart rate, and will stop thinking clearly. In advanced stages of hypothermia, victims will stop shivering, lose consciousness, have blue skin, and be unable to walk or speak. As this condition gets worse, a victim's breathing and heart can stop, and the victim may die.
- ✔ Avoid **hypo**thermia by preventing heat loss. The best way to do this is to be properly equipped and clothed. This may include wearing immersion suits, wetsuits, warm synthetic clothing (not cotton), or waterproof clothing.
- ✔ Your body temperature can drop quickly if you are in the water. Get as far out of the water as possible by climbing onto any floating object, such as the boat's hull. This will help prevent heat loss from your body.

- ✔ If you can't get out of the water, keep your head out of the water. Curl into a ball or huddle with other people and limit movement of your arms and legs to further prevent heat loss. These are known as HELP, or Heat Escape Lessening Positions.
- ✔ You can easily reverse **hypo**thermia in the early stages by exercising vigorously to generate body heat, and by limiting your exposure to cold.
- ✔ Get medical help except in mild cases, because you can end up with other problems if you don't warm up properly.
- ✔ If left untreated, **hypo**thermia and **hyper**thermia can result in death.
- ✔ This **hypo**thermia chart shows how long someone can survive at various water temperatures.

Hypothermia Chart

If the water temperature is... degrees (F)	Exhausted or unconscious, your survival time is...	Otherwise, your expected survival time is...
32.5 degrees	Under 15 minutes	Under 15 to 45 minutes
32.5 to 40 degrees	15 to 30 minutes	30 to 90 minutes
40 to 50 degrees	30 to 60 minutes	1 to 3 hours
50 to 60 degrees	1 to 2 hours	1 to 6 hours
60 to 70 degrees	2 to 7 hours	2 to 40 hours
70 to 80 degrees	3 to 12 hours	3 hours to indefinitely
over 80 degrees	indefinitely	indefinitely

FOR MORE INFORMATION ON HYPOTHERMIA, CONSULT WEB SITE:

www.dbw.ca.gov/resourc.htm and click on "hypothermia."

QUESTION

Where do you usually go boating, or where would you like to go? Check out the water temperatures listed below and then refer to the hypothermia chart. If you fell overboard and lost your boat, how long could you expect to survive?

REMEMBER

Life jackets can keep you warm and help save your energy. If you are not wearing your life jacket, your expected survival time is a lot less.

WATER TEMPERATURE

Here is the ***estimated*** daytime water temperatures for several California locations.

The Ocean: Year-round temperatures from approximately Santa Barbara northward range from the high 40s to mid 50s. South of Santa Barbara, summer temperatures can reach mid 70s and winter temperatures will range in the high 50s to low 60s.

Location		Time of Year	Approximate Temperature	Time of Year	Approximate Temperature
Valley Rivers	Northern California	Spring	67 degrees F	Summer	79 degrees F
	Southern California	Spring	70 degrees F	Summer	85 degrees F
Mountain Rivers		Spring	47 degrees F	Summer	73 degrees F
Mountain Lakes		Spring	40 degrees F	Summer	65 degrees F
Valley Lakes		Spring	57 degrees F	Summer	70 degrees F

These are approximate temperatures.

BOAT SMART

FIRST AID TRAINING

Besides learning about **hypo**thermia and **hyper**thermia, you need to know a lot more about first aid. You should receive training in basic first aid and CPR, or cardiopulmonary resuscitation, which is helping an unconscious victim to breathe and maintain a heartbeat. The best place to look for a class near you is your local Red Cross office. Look in your local phone book or check the Internet at **http://www.redcross.org/where/where.html** for a local chapter near you.

BOAT SMART

NOISE LEVELS

What is too much noise?

Noise from poorly muffled or unmuffled motors is not only annoying — it keeps boat operators from hearing voices, signals, and danger warnings. If you're around a loud noise for a long time, the noise can make you tired and lower your reaction time.

The next time you go boating, be polite to others. Reduce the noise level, especially when you're in crowded waterways, or near residential areas. Courtesy counts. Remember, your actions reflect on all boaters.

REVIEW QUESTIONS: Personal Safety

Answer these questions by circling T for true or F for false.

1. The ability to swim and float is basic to personal safety on the water.....T F
2. You don't need sunscreen and sunglasses when you're boating, because it is cooler on the water than on the land .....T F
3. Dizziness and excessive sweating are early symptoms of hyperthermia....T F
4. Symptoms of the early stages of **hypo**thermia include being unable to speak or walk, and losing consciousness .....T F
5. Drinking fluids, such as caffeinated sodas and tea, is the best way to prevent **hyper**thermia .....T F
6. Long exposure to loud noise from your boat's engine can be a stress factor.....T F

Turn to page 78 for correct answers.

Don't drink and drive!

REMEMBER

In California, it is against the law for anyone to operate a boat or motor vehicle with a blood alcohol concentration of 0.08 percent or more. People under the age of 21 who are convicted of operating a boat or motor vehicle with a blood alcohol concentration of 0.01 percent or higher can lose their privilege of getting or keeping a driver's license.

REMEMBER

Drinking alcoholic beverages will not prevent **hypo**thermia. Alcohol opens tiny blood vessels in your body and brings more blood to the surface of the skin, giving you a false sense of warmth. Actually, the increased blood flow near the skin's surface increases the loss of body heat.

Turn to page 78 for correct answers.

ALCOHOL AND DRUGS

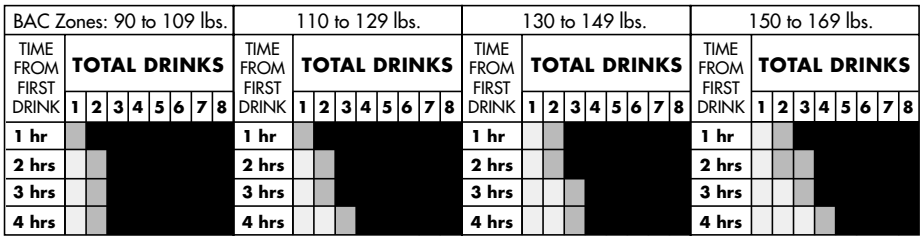
Drinking alcohol and using other drugs while boating causes many boating accidents. Using alcohol or drugs by themselves can make your judgment poor and slow your response time — and reduce your ability to respond to dangerous incidents. Using alcohol or drugs increases the effects of sun, wind, waves, vibration, and noise on you. Alcohol and drugs also raise your chances of getting into an accident.

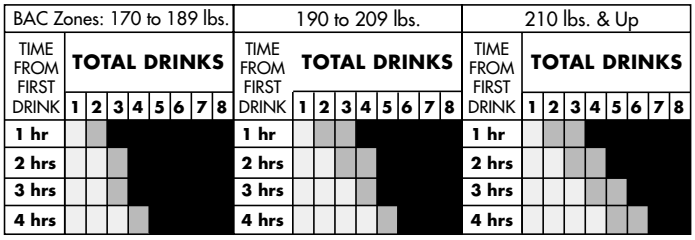
TO LEARN MORE ABOUT THIS SUBJECT, CONSULT WEB SITE:

www.dbw.ca.gov/indexabc.htm#0plaw

This chart will help you understand how drinking alcohol can affect you, depending on how much you weigh. It's important to note that any level of alcohol in people under the age of 21 is against the law.

Alcohol Consumption Chart





Shadings in the charts above mean:

- (.01% – .04%) May be DUI – Definitely DUI if under 21 yrs. old.
- (.05% – .07%) Likely DUI – Definitely DUI if under 21 yrs. old.
- (.08% and Up) Definitely DUI.

REVIEW QUESTIONS: Alcohol and Drugs

Answer these questions by circling **T** for true or **F** for false.

1. Alcohol makes the effects of motion and temperature worse.....T F
2. It is against the law for an 18-year-old person to operate a vessel or vehicle with a blood alcohol level of 0.04 percent.....T F
3. A person 32 years old and weighing 140 pounds would be able to have three drinks over a two-hour period and not be legally drunk.....T F

Safety Equipment

You must have safety equipment to operate any boat or vessel safely. Some safety equipment is required by law, while other equipment is strongly recommended. In this chapter, we will cover the most important piece of equipment for personal safety — the personal flotation device (PFD), which most often means a life jacket. In Chapters 2, 3, and 4, we will cover equipment for general boating safety and for specific vessels.

Life Jackets

The most important piece of equipment for safe boating and general water safety is the personal flotation device (PFD) which can be a throwable or wearable device. Wearables are better known as life jackets. Most boating deaths happen when people don't wear life jackets and drown. Today's life jackets are colorful, comfortable and easy to wear. Wearing a life jacket is important, no matter how well you swim or operate a boat. You never know when your boat may overturn or when you may fall overboard.

REMEMBER

The clothing you are wearing and the items you may be carrying will affect how well your life jacket keeps you afloat.

When using a life jacket, make sure it fits well and is well maintained so it works properly.

A personal flotation device should keep you afloat until help comes — so make sure it's the right life jacket for your weight and chest size. To choose the correct PFD:

- ✔ ***Check*** the type of boating you will do.
- ✔ ***Check*** the type of activities you will do.
- ✔ ***Check*** the clothing you will most likely wear.
- ✔ ***Check*** for a U.S. Coast Guard approval number on the label.

TAKE NOTE

Every person on board a personal watercraft (PWC) and any person being towed behind a vessel must wear a Coast Guard-approved Type I, II, III, or V life jacket. (For exceptions, see water skiing.)

To make sure that you have chosen the right life jacket for yourself:

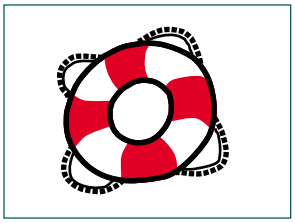
- ✔ Check for a snug fit. Adjust straps and buckles to ensure a proper fit that does not restrict your breathing. If someone lifts your life jacket by the shoulder straps, the jacket should not cover your ears. Readjust the straps and buckles, and if it still doesn't pass the lift test, try a different size.
- ✔ Check how well your life jacket keeps you afloat by relaxing on your back in safe water and tilting your head back. To stay safe, your life jacket should keep your chin and mouth out of the water, and allow you to breathe easily. If your life jacket doesn't turn you face up in the water, you may want to replace it with one that does.

RECOMMENDATION

All passengers should **wear** a U.S. Coast Guard-approved, properly fitted, life jacket when on a moving boat. For added safety, attach a whistle to each life jacket.

Are you operating a boat less than 16 feet long, or a canoe or a kayak of any length? Then you must carry for each passenger:

- ✔ A U.S. Coast Guard-approved Type I, II, III, or V life jacket for each person on board. If stored, these PFDs must be easy to get to, and you must show passengers the location of PFDs and other safety equipment. A Type V PFD, which is a special-use flotation device, must be approved for the activity it's being used for, and must be worn at all times.
- ✔ Children under 12 years old must wear a U.S. Coast Guard-approved life jacket when on a moving boat that's 26 feet long or less.



Type IV

For a boat 16 feet or longer, you must carry for each passenger:

- ✔ The same requirements as above and one easy-to-reach Type IV device designed for throwing — such as a ring, cushion, or horseshoe buoy for each boat.

FOR MORE INFORMATION ABOUT PERSONAL FLOTATION DEVICES, CONSULT WEB SITE:

www.dbw.ca.gov/pfd.htm

BOAT SMART

WHAT KIND OF LIFE JACKET SHOULD YOU WEAR?

Type I

- **Type I, off-shore life jacket. (22 pounds of buoyancy)**

Where to use:	Open, rough, or remote water, where rescue may be slow in coming. Although it's permitted, a Type I life jacket may be too bulky to allow you to paddle.
Advantages:	Floats best. Turns most unconscious wearers face-up in the water. Highly visible color.
Disadvantages:	Bulky.
Sizes:	Only two sizes to fit most children and adults.

Type II

- **Type II, near-shore buoyant vest. (15.5 pounds of buoyancy)**

Where to use:	Good for calm, inland water, or where you have a good chance of a fast rescue.
Advantages:	Turns many, but not all, unconscious wearers face-up in water. Less bulky, more comfortable than Type I.
Disadvantages:	Not designed for long hours in rough water. Will not turn some unconscious wearers face-up in the water.
Sizes:	Infant, child-small, child-medium, adult.

- **Type III, flotation aid. (15.5 pounds of buoyancy)**

  Where: Good for calm, inland water or where you have a good chance of fast rescue.

  Advantages: Generally the most comfortable for continuous wear because of the freedom of movement for activities such as personal watercraft, water skiing, paddling, small boat sailing, and fishing.

  Disadvantages: Not for extended use in rough water. Wearer may have to tilt head back to avoid face-down position in the water.

  Sizes: Many individual sizes from child-small to adult.

Type III

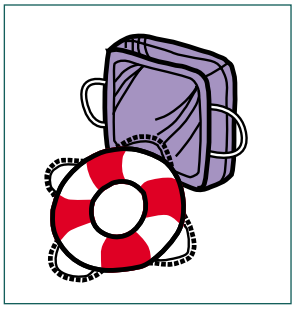
- **Type IV, throwable device.**

  Where: Good for calm, inland water with heavy boat traffic, where help is always nearby.

  Advantages: Can be thrown to someone. Good back-up to wearable PFD.

  Disadvantages: Not for unconscious persons. Not for non-swimmers or children. Not good for many hours in rough water.

  Kinds: Cushions, rings, and horseshoe buoys.



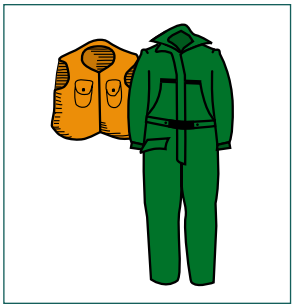
Type IV

- **Type V, special-use device.**

  Where: Required to be worn for special uses or conditions.

  Advantages: Made for specific activities. Varieties include sailboarding and rafting vests, deck suits, work vests, hybrid PFDs, and others.

  Disadvantages: See label for limited use.



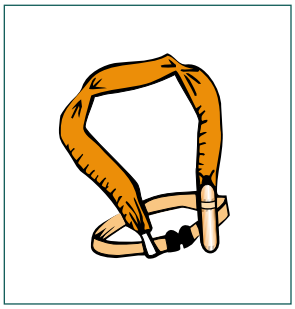
Type V

- **Type V, hybrid device (inflatable)**

  Where: Required to be worn to be considered a regulation PFD and must be used only for approved activities.

  Advantages: Least bulky of all types. High flotation when inflated. Good for continuous wear. Equal to either Type I, II, or III performance, as noted on the label. Choice between manual (pull) and oral inflation systems.

  Disadvantages: May not adequately float some wearers unless partially inflated. Requires correct use and care of the inflation chamber. Only some brands are U.S. Coast Guard-approved. Not recommended for non-swimmers and not intended for use while water skiing or on personal watercraft.



Type V, Hybrid

TO LEARN MORE ABOUT LIFE JACKETS, CONSULT WEB SITE:

www.dbw.ca.gov/pfd.htm

Some things to remember:

To make sure that your PFDs remain in good condition.

- Do not alter the PFDs. An altered PFD no longer meets legal requirements and may not save your life.
- Do not place heavy objects on PFDs during storage.
- Do not use PFDs as kneeling pads, boat fenders, or seat cushions because they lose buoyancy when they're crushed.
- Let PFDs air-dry thoroughly before putting them away.
- Always store your PFDs in a well-ventilated place, out of direct sunlight.
- Never dry your PFDs by a direct heat source, such as a dryer, heater, or radiator.
- Before wearing, check PFDs for signs of wear and age. Look for rips or tears, mildew, loose or missing straps, frayed webbing, broken zippers or buckles, and hardened stuffing. A PFD with any of these problems must be replaced.

REVIEW QUESTIONS: Life Jackets

Answer these questions by circling **T** for true or **F** for false.

1. Although life jackets come in different styles, there is no difference in their capacity to save a person. .....T F
2. For added safety, it's a good idea to attach a whistle to your life jacket. ....T F
3. The nice thing about life jackets is that one size fits all. .....T F
4. You should always check your life jacket for signs of wear or age before using it.....T F
5. All passengers should wear U.S. Coast Guard-approved, properly fitted life jackets under the following conditions: in rough seas, more than 3 miles off shore, riding on any boat underway, when the wearer is not a good swimmer .....T F

Turn to page 78 for correct answers.

Chapter 2

BOATING LAW, NAVIGATIONAL RULES AND NAVIGATIONAL AIDS

OBJECTIVES

You will learn:

- General laws about operating a boat within the State of California
- Safety equipment required by law
- Navigational rules and navigational aids

Introduction

OK, now you know about personal safety. But before you operate any boat, you should understand Boating Law and the Rules of Navigation.

Boating Law includes registering your vessel properly, and knowing and using the right safety equipment. The Rules of Navigation enable you to handle your vessel when other boats are around, and safely launch in harbors and other busy waterways that use aids to navigation (called ATONs). Know the rules ... and help prevent accidents.

Boating Law

California Law Governs

- ✔ the age of boat operators
- ✔ environmental protection
- ✔ required safety equipment
- ✔ navigational rules and aids
- ✔ boat ownership and registration

California boating laws are complicated, because they apply to a wide variety of vessels — from super tankers to kayaks — that operate on the state's waterways, such as the ocean, lakes and rivers. Because the laws are complex, you must take time to become familiar with them.

In any boating area, International, Federal, State, County, and City laws can apply. For instance, **international** and **inland** waters have separate navigational rules. Safe boaters are familiar with — and must obey — all the laws for where they're boating and what kind of boat they're using. This section contains rules and regulations for specific types of boats.

The U.S. Coast Guard enforces the law on federal waters (which are coastal waters and rivers and lakes that extend to more than one state). In California, most recreational boating law enforcement is done by county sheriff's officers, police officers, park rangers, and other land use agencies. These officers enforce general boating law, navigational regulations, and local restrictions.

KNOW THE LAW

Every boat owner and operator must know the law. Remember, if a law enforcement officer stops you, you have no excuse for not knowing the law.

Court-Ordered Boating Education

REMEMBER

Under the law, no person shall operate a vessel in a reckless or negligent manner, endangering life, limb or property.

- ✔ A person convicted of a specified moving violation — such as reckless or negligent operation or speeding — ***must*** be ordered by the court upon a first conviction to **complete and pass** a boating safety course.
- ✔ Any person convicted of operating a motorboat under the influence of drugs or alcohol must be ordered by the court to take a boating safety course approved by the Department of Boating and Waterways.
- ✔ Proof of completion and passage of the course must be submitted to the court within seven months of the time of the conviction.

Age of Operator

In California

- ✔ A person must be 16 years old or older to operate any vessel powered by a motor of 15 horsepower or greater - except sailboats 30 feet or less in length, and motorized dinghies under certain conditions. These conditions include using a dinghy directly between a moored vessel and the shoreline, or between a moored vessel and another moored vessel.
- ✔ People 12 to 15 years old may operate any vessel powered by a 15-horsepower or larger motor, if they're supervised on board by someone at least 18 years old.

Required Safety Equipment

Recreational vessels must carry specified safety equipment, which may vary according to the type of boat, the boat's power source, the place and time you're using it, and the number of people aboard. Sailboats, canoes, rowboats, and inflatable rafts equipped with motors are considered motorboats and must be equipped as motorboats.

Fire Extinguishers

If you answered "yes" to any of the fire extinguisher questions

Your boat must carry a U.S. Coast Guard-approved fire extinguisher in an easy-to-reach location.

Does your boat have any one or more of the following? See left column text.

- ✔ Inboard or stern-drive engine
- ✔ Closed compartments where portable fuel tanks may be stored
- ✔ Double-walled hulls that are not sealed or not completely filled with flotation material
- ✔ Enclosed living spaces
- ✔ Closed stowage compartments in which combustible or flammable materials may be stored
- ✔ Permanently installed fuel tanks

Information to remember:

Fire extinguishers are classified by letters and Roman numeral symbols. The letter indicates the type of fire the device is made to extinguish:

- ***Type A*** for combustible solids, such as wood and paper
- ***Type B*** for flammable liquids such as gasoline and oil
- ***Type C*** for electrical fires
- ***Type D*** for combustible metals, such as magnesium (Generally not for use on boats.)

Type B is commonly used on boats and can extinguish gasoline, oil and grease fires. Type C contains dry chemicals that are made for electrical fires, because they reduce the chance that you will be shocked while putting out a fire.

The Roman numerals after the letters, I and II, indicate the size of the extinguisher. A Class B-II extinguisher has four to five times more extinguishing material than a Class B-I extinguisher.

TAKE NOTE

Boat operators should show all passengers where safety equipment is stored. Make sure your passengers know what to do in case of an emergency. Show them if they don't know.

The following chart describes the required fire extinguisher type by boat size.

Minimum Number of Portable Fire Extinguishers Required

(with no permanent fire extinguishing system in the engine or machinery compartments)

Boat Length	Quantity of Fire Extinguishers	Type of Fire Extinguisher
◆ Less than 26 feet	1	B-I
◆ 26 feet to less than 40 feet	2	B-I or
	1	B-II
◆ 40 feet through 65 feet	3	B-I or
	1	B-II and
	1	B-I

Using a fire extinguisher

P - Pull pin

A - Aim at base of fire

S - Squeeze handle

S - Sweep side to side using short bursts, a half-second to 1 second each

Some things you should know:

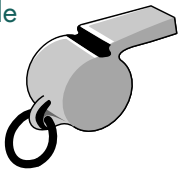
- Before using portable extinguishers, read the instructions.
- Never use a foam extinguisher on electrical fires, because these extinguishers contain water and you might be electrocuted.
- Never try an extinguisher to see if it works properly - the valves may not reseal and the extinguishing material may gradually leak.
- After using an extinguisher, recharge it before using it again. Check your fire extinguisher at least once every six months for the pressure level and signs of powder on the nozzle. If the extinguisher contains a dry chemical extinguishing material, turn the extinguisher end-to-end. If the chemical is packed, shake it or hit the bottom with your hand to loosen it.

FOR MORE INFORMATION ABOUT FIRE EXTINGUISHERS, CONSULT WEB SITE:

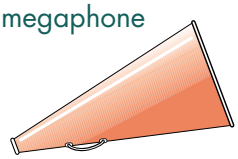
www.dbw.ca.gov/fire.htm

air horn

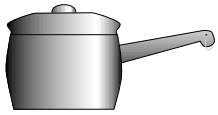
whistle



megaphone



metal pot



Sound Signals

All boats must carry some means of producing a sound signal, loud enough to be heard for at least half a mile.

Things to remember:

You must use your sound signaling device:

- when meeting, crossing or overtaking another boat
- during periods of reduced visibility, such as fog or a blind bend in the river or narrow channel
- during an emergency, to attract attention

Sound signaling devices come in many shapes and sizes. You can use:

- an air horn (hand held or mounted)
- an electric horn
- a whistle

In an emergency you can even use:

- a megaphone made from a rolled up chart
- a metal pot to bang on

Something to think about

When you come upon more than one vessel, you may not be able to signal your intention with horn signals. ***You must take any action necessary to avoid a collision.***

Information you should know:

Vessels 40 feet or longer are required to carry a whistle and a bell to meet the sound signaling device requirements.

Radios such as VHF are commonly used to communicate between boats. They can be valuable tools for signaling other boats when you cross or overtake them.

FOR MORE INFORMATION ON REGULATIONS FOR SOUND SIGNALS, CONSULT WEB SITE:

www.dbw.ca.gov/indexabc.htm#inland

Lighting

All moving boats must show navigation lights between sunset and sunrise, and at times when it's hard to see very far. Personal watercraft are prohibited from operating at night.

Some things to remember:

Navigation light requirements vary by vessel length and power source. In general, requirements are the same for inland and international rules. The chart shows the color, location, and direction of the lights for recreational boats (or pleasure craft).

Figure 1

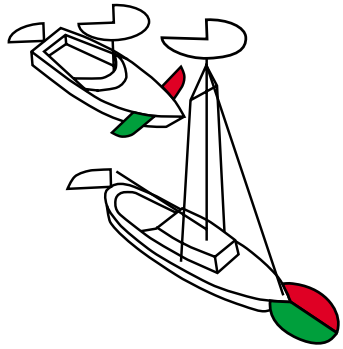


Figure 2

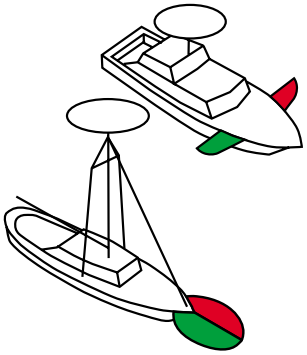
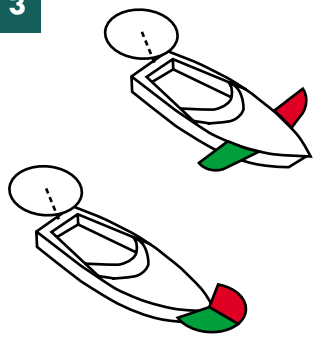


Figure 3



Row boats, paddle boats, and sailboats less than 7 meters in length, as in Figure 7, must have one all-round light ready to display in time to prevent a collision.

Figure 4

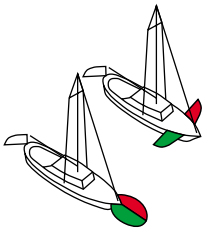


Figure 5

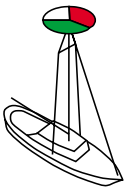


Figure 6

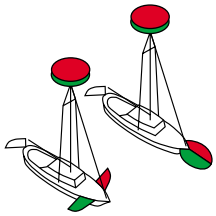
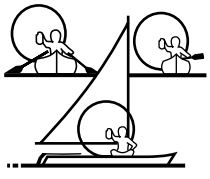


Figure 7



Some things to remember:

At night, motorboats less than 40 feet long may combine the masthead light and stern light into one all-round white light. When at anchor, boats must show one all-round white light at night. During the day, these boats must show day shapes. A day shape might be one black ball that is visible from the highest point of the vessel, which signals that the boat is at anchor.

Boats less than 12 meters (39 feet, 4 inches)

- Motorboats or sailboats using power: The lighting arrangements in figure 1, 2 or 3 may be used.
- Sailboats using sails alone: The lighting arrangements in figure 4, 5, or 6 may be used.

Boats between 12 and 20 meters (39 feet, 4 inches to 65 feet, 7 inches)

- Motorboats or sailboats using power: The lighting arrangements in figure 1, 2 or 3 may be used.
- Sailboat using sails alone: The lighting arrangements in figure 4, 5 or 6 may be used.

Location of lights

Lights should be located as shown in the drawings. The masthead light (forward white light in figure 1) must be at least one meter — 39 inches — higher than the colored lights on a boat less than 40 feet long, and at least 8 feet above the gunwale on a boat between 40 and 65 feet long.

Exceptions

Motorboats or sailboats using power, built before Dec. 24, 1980: The lighting arrangement in figure 1, 2 or 3 may be used. But the arrangement in figure 3 is not acceptable on a boat 40 feet or longer on international waters.

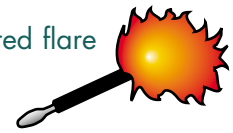
** Taken from U.S. Coast Guard Navigation Rules*

Visual Distress Signals (On Coastal Waters Only)

orange flag

flashlight

red flare



orange smoke signal

red meteor

Be prepared to use U.S. Coast Guard-approved visual distress signals. They include:

- ✔ An orange flag printed with a black square and ball, for day use only
- ✔ A flashlight, for night use only
- ✔ A red, hand-held flare, for day or night use
- ✔ An orange smoke signal, for day use only
- ✔ Red meteor flares, for day and night use

FOR INFORMATION ABOUT VISUAL DISTRESS SIGNALS, CONSULT WEB SITE:

www.dbw.ca.gov/indexabc.htm#equipment

Something you should know:

The following boats do not have to carry night signal devices unless they are operating at night:

- ✔ Recreational boats less than 16 feet long
- ✔ Boats propelled by hand, such as rowboats, canoes, and kayaks
- ✔ Open sailboats less than 26 feet long with no motors attached
- ✔ Boats taking part in organized marine events

REMEMBER

On coastal waters, boats 16 feet or longer must carry three daytime signals and three nighttime signals. One orange flag may be substituted for three daytime signals, and one SOS distress light may be substituted for three nighttime signals.

BOAT SMART

Backfire Flame Arrestors

Does your boat need a backfire flame arrestor?

All motorboats with enclosed gasoline engines, except those with outboard engines, must have a backfire flame arrestor on each carburetor. The backfire flame arrestor is designed to safeguard against fire and explosion in the engine compartment, and must meet U.S. Coast Guard standards.

BOAT SMART

Noise Levels

You should never change your muffler or exhaust system, because it may increase the noise level or create a dangerous exhaust leak. You may be breaking local and state laws for noise if your boat is too loud. In addition, you should be courteous to those around you. This is especially true where people are enjoying the shoreline, in congested areas, or near residential or camping areas.

Ventilation

Are all boats required to have a ventilation system?

Regulations require that all enclosed engine and fuel tank compartments on gasoline-powered boats be ventilated, because gasoline fumes can gather in the bilge — the lower part of a boat's hold — and create a dangerous explosion and fire hazard.

Information you should know:

You must have at least two ventilator ducts — one exhaust duct and one intake duct. Intake ducting must extend midway to the bilge, or at least below the carburetor air intake level. Exhaust ducting must extend from the lower bilge to cowls in the open air. Manufacturers must install exhaust blowers in engine compartments so gasoline fumes can escape before the engines start. These blowers should be turned on at least four minutes before the engine is started to make sure that any explosive fumes have been removed.

REMEMBER

A spark from the electrical or ignition systems can cause an explosion if gasoline fumes are present.

Boats built after July 31, 1980, having enclosed gasoline engines and fuel tank compartments, must have power-operated ventilation systems.

TO LEARN MORE ABOUT THE NEED FOR VENTILATION, CONSULT WEB SITE:

www.boatus.com/course/documents/REGULATIONS.html

and click on "required equipment"

REVIEW QUESTIONS: Safety Equipment

Answer these questions by circling the letter next to the correct answer.

1. Type C fire extinguishers are recommended for:
   a. Gasoline
   b. Flammable liquid
   c. Electrical Fires
   d. Wood
   e. All of the above

2. Sounding a signal is required when:
   a. Overtaking, crossing, and meeting another boat
   b. A boat is too small to be seen by larger boats
   c. In fog
   d. A boat does not have a hailer or megaphone aboard
   e. Both a and c

3. All boats must have lighting if:
   a. The boat has a generator on board
   b. When they are on the water between sunset and sunrise
   c. When they are navigating in foggy weather
   d. When they are too small to be seen by larger boats
   e. Both b and c

Turn to page 78 for correct answers.

Alcohol And Operating A Boat

Special rules for people under 21 years

People under 21 years old who are convicted of operating a boat with a BAC of 0.01 percent or more can lose their privilege of getting or keeping an automobile driver's license.

It is against the law to operate a boat or water ski with a blood alcohol concentration (BAC) of 0.08 percent or more. People 21 years old or older who are convicted of boating under the influence will face the same penalties as if they were operating a motor vehicle on a road under the influence. Alcohol affects reaction time and impairs judgment. See Chapter 1 for more detailed information on boating and alcohol use.

Boat Ownership and Registration

Hull Identification Number

Hull Identification Number (HIN) identifies the vessel and protects the owner against theft.

The HIN is similar to a vehicle identification number (VIN) on a car. Boats must have a HIN permanently attached to the transom on the starboard (right) side, above the waterline. Boats built since 1984 must also have the HIN permanently attached in a second, unexposed location. In addition, you should record the HIN and keep it in a safe place away from the boat.

Registering a Boat

In California, all undocumented motorboats must receive a registration number.

YOU MUST HAVE

Your registration certificate is required to be aboard your boat when it is underway. You will receive a citation if you are stopped by a law enforcement officer and do not have the current registration certificate with you.

In California, all undocumented motorboats, as well as all sailboats more than eight feet in length, if used mostly on California waters must be registered and properly display the state-issued number. Registration can be obtained at any Department of Motor Vehicles (DMV) office. After giving the information and paying the required fees, the boat owner will be issued a Certificate of Number, Certificate of Ownership, and a pair of registration stickers. To register a boat with the State, you must possess and show a HIN.

If you own a boat that's registered in another state, you may keep it in California for 90 days without having to register it at a California DMV office. After 90 days, though, your boat must be registered with the state. You then have 30 days to get it done.

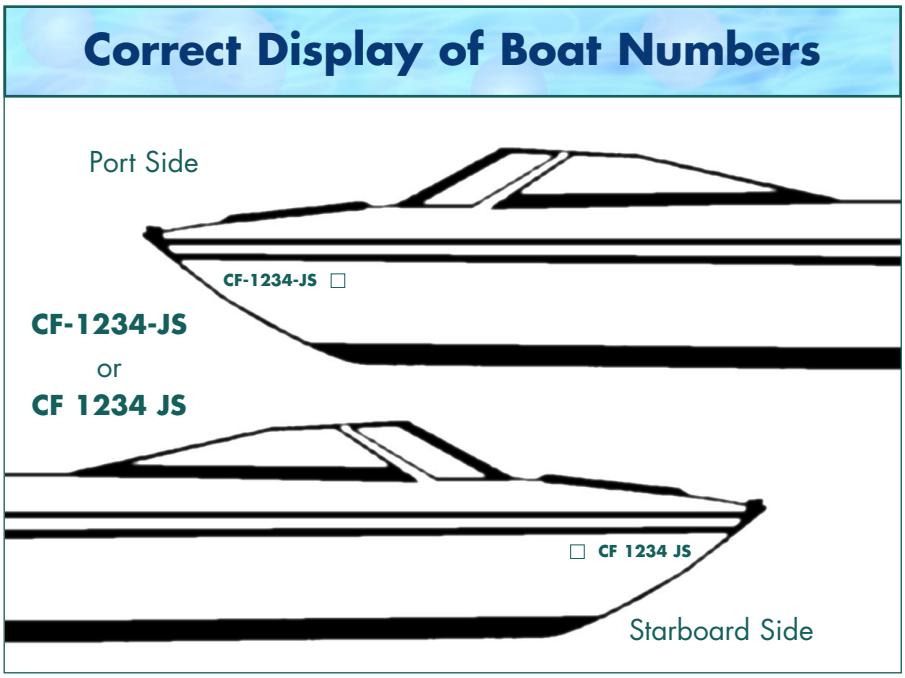
Your certificate of number is required to be aboard your boat when it is underway. You will receive a citation if you are stopped by a law enforcement officer and do not have the current certificate of number with you. Boat registration must be renewed every two years. When you receive the new decals, remove the old ones and apply new decals as directed.

Once registered, the boat registration numbers must be purchased and displayed properly.

- ✔ The figures must read left to right.
- ✔ They must be displayed on the forward half of the starboard and port sides of the boat.
- ✔ Numbers must be in plain, block letters.
- ✔ Numbers must be at least three inches high.
- ✔ Numbers must be light-colored on dark backgrounds - or dark-colored on light backgrounds - and must be easy to see, and as high above the waterline as possible.
- ✔ No number other than the number assigned can be displayed on the forward half of the vessel.
- ✔ Letters must be separated from the numbers by spaces or hyphens.
- ✔ Registration stickers must be displayed three inches away from the number and toward the rear of the boat.

REMEMBER

Personal watercraft are boats, not toys, and are subject to the same registration laws and requirements of similar sized traditional boats.



Because of the size and shape of some models of personal watercraft or other boats, it may be difficult to apply registration numbers so that they're easy to see. If in doubt, check with local authorities.

Documenting a Boat

Californians can document their boats with the U.S. Coast Guard.

Larger boats meeting Coast Guard guidelines can be given a documentation number by the U.S. Coast Guard. Documentation is a form of national registration and is useful for boats taken into international waters or other countries. Documented vessels must have their name and hailing port printed on the stern, above the waterline. In California, a documented vessel need not be registered by the state. For more information about this process, contact the U.S. Coast Guard.

Environmental Laws

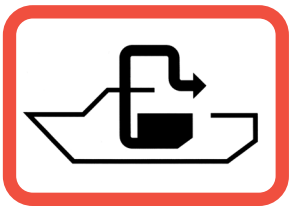
State and federal laws are designed to keep waterways cleaner and pollution free. These laws apply to all boats, no matter their size.

Vessel Sewage (Human Waste)

Though it's against the law to dump untreated sewage into any navigable U.S. waters, some recreational boaters still discharge raw waste into coastal and inland waters. You might think that one person discharging human waste doesn't cause a problem. But with almost one million boats registered in California, pollution from vessel sewage can be a huge problem.

The Federal Clean Vessel Act of 1992 helps reduce pollution from sewage discharges from vessels. Under this Act, it is against the law to discharge untreated waste anywhere within the three-mile U.S. territorial limit. The U.S. Coast Guard can issue a citation up to $2,000 for the illegal discharge of waste. To avoid fines, use a U.S. Coast Guard-approved Marine Sanitation Device (MSD) or a holding tank while out on the boat, and pump the contents out at a shoreside station.

Clean Vessel Act PUMPOUT LOGO



The California Department of Boating and Waterways is using Clean Vessel Act funds to build additional vessel sewage pumpout stations throughout the state. Check with your local marina and look for the national symbol to find the closest pumpout station.

Plastic

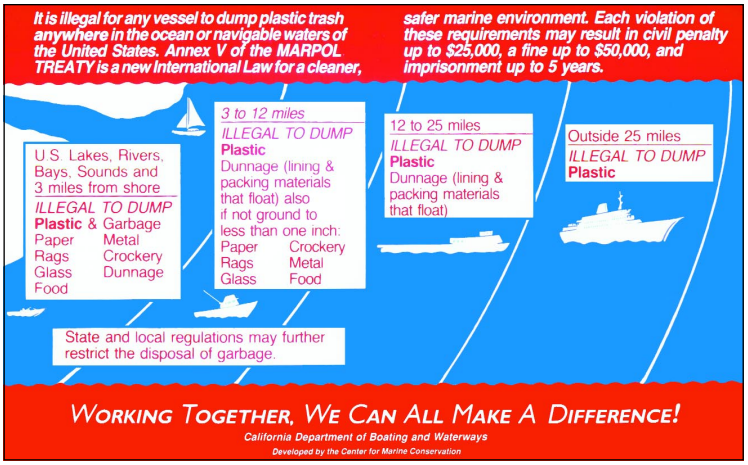
Pollution of the seas from garbage dumping is a global problem. The international treaty to prevent pollution from ships (MARPOL) attacks the plastic pollution problem. It is against the law to dump plastic trash into the ocean or into navigable waters of the United States. Regional, state, or local regulations may further restrict dumping garbage.

Plastic does not easily decay, and it's dangerous to animal life. Thousands of animals die each year after becoming entangled in or eating plastic trash. It can also be a hazard to boats if caught in a propeller or water intake. The pollution laws apply to all boats regardless of size. Any violation may result in a civil penalty up to $25,000 and/or criminal penalty up to $50,000, and/or 5 years imprisonment.

BOAT SMART

Although you'll find legal zones for discharging garbage, responsible boaters will not dump any garbage or waste into the water.

MARPOL Placard



CAUTION

If your boat is 26 feet or longer, it must display a 9-inch by 4-inch placard telling the crew and passengers what is against the law to throw overboard. Display the placard where everyone can read it.

Oil and Oily Waste

It is against the Federal Pollution Control Act to pump or discharge any kind of oil into navigable waters. Even a small amount of oil accidentally spilled can quickly spread over a large area. You are responsible for cleanup costs and for correcting any environmental damage caused by your fuel spill, under the California Oil Spill Prevention and Response Act of 1990.

REMEMBER

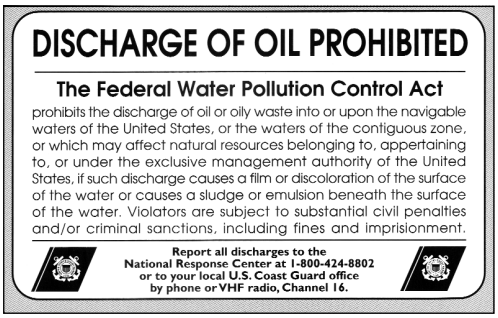
Federal law makes it illegal to discharge oil or oily waste into or upon navigable waters, and into zones next to the navigable waters of the United States, if the discharge causes a film or sheen upon, or discolors, the surface of the water, or causes a sludge or emulsion beneath the surface of the water. Violators are subject to a penalty of $5,000.

BOAT SMART

One pint of oil can create a slick covering about one acre. Wind, tides, temperature and the type of oil all affect how wide the slick spreads.

If your boat is 26 feet or longer, it must display a 5-inch by 8-inch oily waste placard near the bilge pump control station. The placard must list the federal requirements.

Oily Waste Placard



TAKE NOTE

Recreational boaters should call 1-800-OIL-SPILL if they witness or encounter an oil spill.

Packaging Material

It is illegal to discharge packaging material (called dunnage) in inland waters and waters within 25 miles of shore. Packaging material includes cardboard, Styrofoam, paper, plastic or any similar material.

IF YOU WOULD LIKE TO KNOW MORE ABOUT BOATING LAW, CONSULT WEB SITE:

dbw.ca.gov/public_information.htm and click on title "Harbors and Navigation Code"

REVIEW QUESTIONS: Alcohol, Boat Registraion and Environmental Laws

Answer these questions by circling the letter representing the correct answer.

1. The Hull Identification Number:
   a. Describes the size of the boat
   b. Is similar to a VIN on an automobile
   c. Indicates that the boat has safety equipment aboard
   d. Is the same as the owner's car license number
   e. Both b and c

2. In California, registration numbers must be displayed by:
   a. All undocumented motorboats
   b. All boats, even if they do not have a motor
   c. Sailboats more than 8 feet long
   d. Boats visiting California
   e. Both a and c

3. California law governing the consequences for drinking alcohol and operating a boat:
   a. Are the same for adults and minors
   b. Do not apply to minors
   c. Are stricter for persons under 21 years of age
   d. Are similar to those governing the operation of a vehicle on the road while under the influence of alcohol
   e. Both c and d

4. The U.S. Coast Guard can issue a fine for dumping human waste up to:
   a. $1,000
   b. $2,000
   c. $5,000
   d. $10,000

Turn to page 78 for correct answers.

Navigational Rules

The main purpose of navigational rules is to prevent collisions and other avoidable accidents, such as grounding in poor visibility, injuring people in the water, and damaging property.

BOAT SMART

While underway, boat operators are required to keep a proper lookout for other vessels, light and sound signals, obstructions, and swimmers.

- ✔ Do not enter restricted areas and do not moor to buoys other than a specially marked mooring buoy.
- ✔ Never obstruct or anchor in a channel, launching area, or route, or interfere with the travel of other boats.
- ✔ Do not exceed 5 miles per hour within 100 feet of a swimmer, or 200 feet of a swimming beach, a swimming float, a diving platform, a lifeline, or a dock with boats tied to it.
- ✔ Whenever you are traveling through a narrow channel or coming around a bend where it's hard to see oncoming traffic, always keep to the right side.

REMEMBER

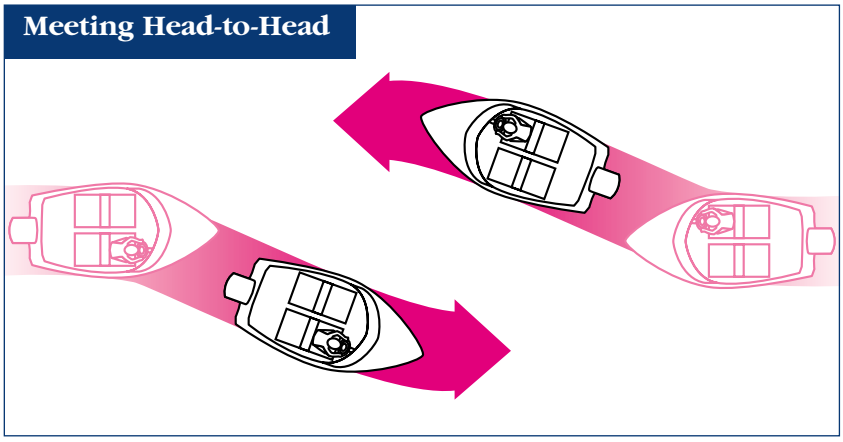
Even if you know the law, that's no guarantee that other boaters do. So, operate your boat with caution. Boat at a safe speed, and keep a safe distance from other boats and obstacles. And always look out for hazards so you can avoid getting into an accident.

Boat-to-Boat Communication

- ✔ You have three ways to communicate between vessels: Light signals, sound signals, and radio. The most common method is radio, but you also need to know how to communicate using light and sound.

Meeting a Boat Head-to-Head

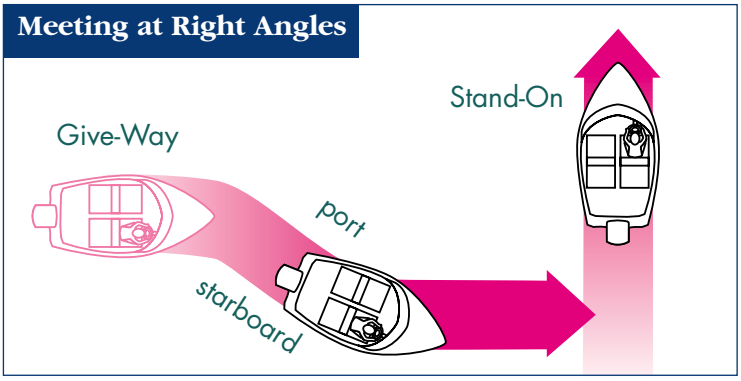
- ✔ Signal your intention to pass port to port by sounding one short (1-second) blast of the horn.
- ✔ Signal your intention to pass starboard to starboard by sounding two short (1-second) blasts.



When Approaching at Right Angles and at Risk of Collision

- ✔ The boat on the right is the ***stand-on*** vessel — the other boat is the ***give-way*** vessel.
- ✔ The stand-on is the privileged vessel and must hold its course and speed.
- ✔ The give-way vessel must direct its course to starboard and pass the stand-on vessel astern. If necessary, the give-way vessel should slow, stop, or reverse.
- ✔ You should ***never*** turn a vessel to port during a crossing situation. Doing so may result in a serious collision.

Meeting at Right Angles



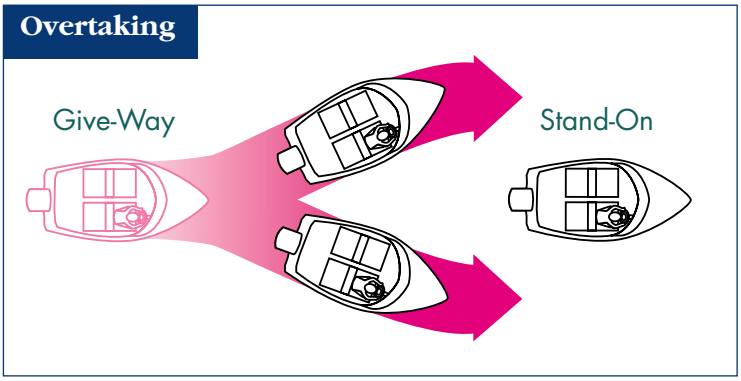
When Two Boats are Running in the Same Direction and the Vessel Astern Wants to Overtake and Pass a Boat

- ✔ The stand-on boat (the boat being overtaken) must maintain its course and speed.
- ✔ If the give-way boat wishes to pass on the port side, it must signal with two short (1 second) blasts.
- ✔ If the give-way boat wishes to pass on the starboard side, it must signal with one short (1 second) blast.
- ✔ To signal that the course ahead is not safe for passing, the stand-on vessel must signal for danger by sounding five or more short, rapid blasts.
- ✔ If you have doubts or there is danger of collision, give five or more short and rapid blasts to signal danger.

TAKE NOTE

Five short whistle blasts alert other boaters to a dangerous situation.

Overtaking



When Approaching Other Boats

- ✔ Normally, motorboats should keep clear of sailboats.
- ✔ Sailboats using auxiliary (backup) engines operate under the same rules as motorboats.
- ✔ Sailboats and boats propelled by oars and paddles usually have the right-of-way over motorboats, because they are harder to maneuver.
- ✔ Sailboats and paddle craft should not interfere with large vessels, other power boats or "working" boats such as fishing vessels and dredges.
- ✔ Large, deep-draft vessels in narrow channels have the right-of-way because they cannot maneuver easily and may have limited visibility. Avoid large ships by staying out of the way, remaining visible, maintaining a lookout, knowing the signals, anchoring in safe places, and using the radio.
- ✔ Be especially alert if you are sailing in a deep-water channel or port, because a large ship can "steal your wind."
- ✔ Pulling a water skier in a heavy-use area means you need to be extra cautious.

Use common sense, extra caution and boating skill when

- Visibility is poor because of fog, rain, bright sun or other reasons.
- The operator of the oncoming boat is not following the standard rules of navigation or is operating the vessel recklessly.
- Operating your vessel in heavy-traffic areas.

Approaching a Blind Bend

- ✔ When your boat is approaching a blind bend, you should signal with one prolonged (4 to 6 seconds) blast.
- ✔ An oncoming boat should return the signal.
- ✔ Motorboats shall keep to the starboard (right) side of the bend or channel whenever it's safe or practical.

Know and remember the "rules of the road"

On the road, drivers use lane lines and stoplights to stay safe. But boaters don't have lines or stop lights on the water, so they must be extra cautious. And, unlike motor vehicles on the road, boats don't have brakes. On the waterways, it's ***very important*** to follow the "rules of the road."

Poor and Reduced Visibility

Poor visibility may be caused by fog, mist, falling snow, heavy rainstorms, or even blowing sand or smoke. If your visibility is reduced, the Inland and International Navigation Rules require any vessel underway to sound a warning signal at least every two minutes.

- ✔ A motorboat should sound one prolonged blast every two minutes.
- ✔ A sailboat under sail should sound one prolonged blast, plus two short blasts, every two minutes.

REVIEW QUESTIONS: Navigational Rules

Define the following terms:

1. Stand-on vessel _____.
2. Give-way vessel _____.
3. Danger signal _____.

Answer the following questions by circling **T** for true or **F** for false.

4. In a head-to-head meeting situation, one short blast indicates your intention to pass port to port.....T F

5. When approaching a blind bend or when operating under poor visibility, no special precautions need to be taken.....T F

Turn to page 78 for correct answers.

Navigational Aids

Like streets and highways, California waterways have navigation signs that direct traffic. These navigation signs are called aids to navigation, or ATONs.

ATONs Help Boaters

- ✔ Avoid problems
- ✔ Navigate from one place to another
- ✔ Travel safely
- ✔ Locate their positions

REMEMBER

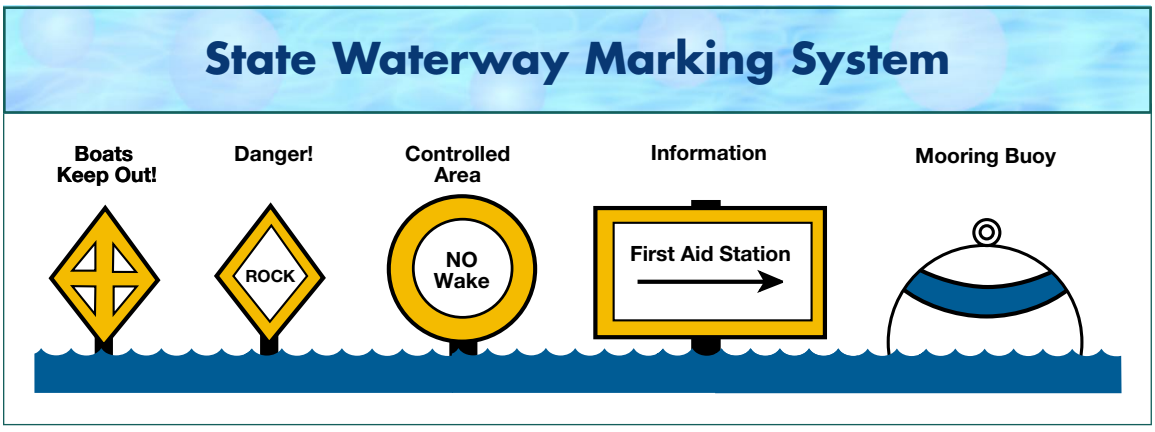
Navigational aids contain information and are regulatory markers used to alert the boater.

BOAT SMART

State Waterway Marking System

On state and state-designated waters, the Uniform State Waterway Marking System (USWMS) uses regulatory markers and aids to navigation. The regulatory markers designate:

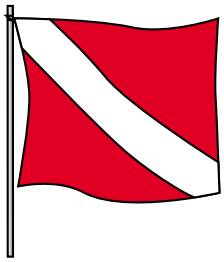
- ✔ Boat exclusion areas: A diamond shape with a centered cross designates areas that boats must stay away from, such as swim areas, dams, or rapids. Wording may be placed outside the crossed diamond shape.
- ✔ Danger: An open-faced diamond identifies the nature of the danger, such as rock, wreck, or shoal (shallow area). Wording may be posted inside the diamond shape.
- ✔ Controlled area: A circular shape designates a controlled area, and wording may identify the type of control, such as "5 mph", "no wake", or "anchoring". The warning may be placed inside the circle.
- ✔ Information: A square or a rectangle displays official information, such as directions and locations.
- ✔ Buoys can be used to display regulatory markers. They may show a white light and may be lettered.
- ✔ A white mooring buoy with a blue band. The buoy may show a white reflector or light, and is for mooring only.



Navigational aids include

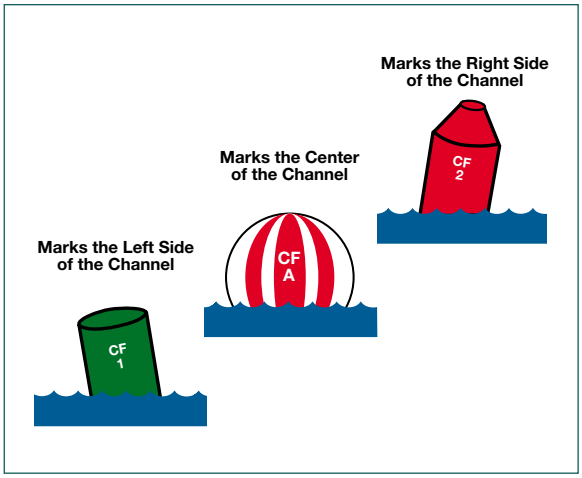
TAKE NOTE

A red flag with a white diagonal stripe is generally flown on a small float or vessel when divers are in the water. It warns other boats to "stay clear."



U.S. Coast Guard Channel Markers have been adopted for use on all state waters. They include:

- ✔ A green can buoy that marks the left side of the channel when you're returning to port.
- ✔ A red-striped spherical buoy that marks the center of the channel.
- ✔ A red nun buoy that marks the right side of the channel when you're returning to port.



"Red, Right, Returning" is a saying to help you remember which side of a channel the red and green buoys are found. When you are returning from seaward to a port or harbor, the red buoys should be on your right side. This will ensure that you're in the middle of a designated shipping lane or channel.

Federal Waterway Marking System

The federal waterway marking system guides navigation on coastal waterways spanning more than one state.

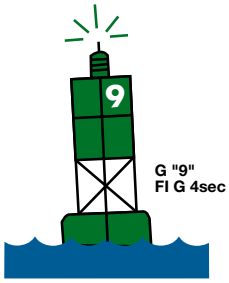
The marking system includes:

- ✔ Lateral aids marking the sides of channels that boaters can see when entering from seaward. Port-side markers are green with odd numbers, and starboard-side markers are red with even numbers. They include red and green lighted buoys, red nun and green can buoys, and red and green daymarks.
- ✔ Safe-water aids mark mid-channels and fairways. These range markers are red and white, exhibit no numbers, but may be lettered. They include white-lighted buoys, spherical-unlighted buoys, and daymarks. Ships line up these markers to stay on course in mid-channel. In recent years, these markers have been equipped with radar reflectors so that large ships can navigate at night.

Federal Waterway Marking System

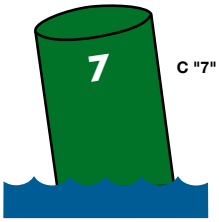
LATERAL AIDS

Port Side
Odd Numbers

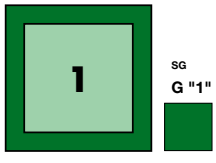


Lighted Buoy
(green light only)

or

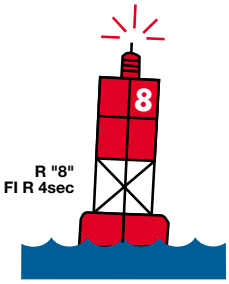


Can Buoy
(unlighted)



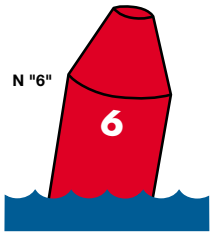
Daymark

Starboard Side
Even Numbers

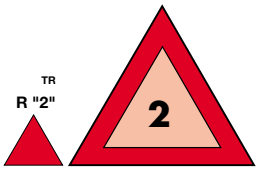


Lighted Buoy
(red light only)

or



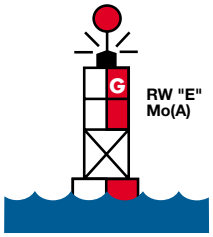
Nun Buoy
(unlighted)



Daymark

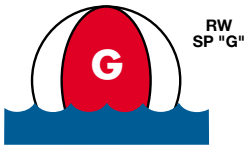
SAFE WATER AIDS

(No Numbers, May be Lettered)

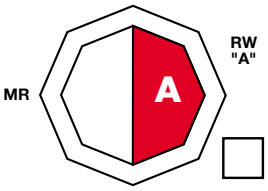


Lighted (white light)

or



Spherical Buoy
(unlighted)



Daymark

Navigational Charts

REMEMBER

Consider tides and tidal currents when docking or mooring your boat, when traveling through inlets or narrow channels, and when underway.

TAKE NOTE

The local knowledge you get at a marina or bait shop can make your boating trip safer.

Navigational charts are available for the California coast, bays, and the Sacramento-San Joaquin Delta (which includes the navigable portions of the Sacramento and San Joaquin rivers). The main purpose of these charts is to mark waterways for deep-draft vessels. These deep-water channels are usually heavy boat traffic areas, and should never be used for anchoring or recreation. Charts show shallow reefs, sandbars, and many other underwater hazards. Boaters can also measure distances they wish to travel by using the distance scale on the chart, or the degrees of latitude on either side of the chart. The rule is one minute of latitude equals one nautical mile, no matter where you are on the earth. You cannot use longitude as an accurate measure of distance, because the scale changes with different locations around the world.

Navigational charts are not available for many lakes and rivers because they are not useful in waterways with extreme changes in water elevation, changes in the shoreline, and areas that may have a lot of floating debris. In these areas, boaters traveling in unknown waters should be extremely cautious and try to learn about any hazards before boating.

In some charted waters, such as the Sacramento-San Joaquin Delta, recreational boaters must be aware of changing waterways, because navigable waters are affected by high volumes of rain, snow melt, and tides. In these areas, floating debris and underwater obstacles can create extreme hazards.

U.S. POWER SQUADRONS AND THE U.S. COAST GUARD AUXILIARY OFFER COURSES ON AIDS TO NAVIGATION. FOR INFORMATION ABOUT THE U.S. POWER SQUADRONS, THE COURSE ON AIDS TO NAVIGATION OR OTHER COURSES, CONSULT WEB SITE:

www.usps.org/frame/toc.html

FOR INFORMATION ON THE U.S. COAST GUARD AUXILIARY AND THEIR COURSES CONSULT WEB SITE:

www.cgaux.org/public/pubframe.htm

TO FIND OUT ABOUT TIDES AND CURRENTS, CONSULT WEB SITE:

dbw.ca.gov/resourc.htm and click on title, "WWW Tide and Current Predictor"

REVIEW QUESTIONS: Navigational Aids

Answer these questions by circling the letter representing the correct answer.

1. ATONs are:
   a. Games played by sailors out to sea
   b. Knots commonly tied by sailors
   c. Federal rules to guide the operation of a boat on the open ocean
   d. Regulatory markers
   e. Both c and d

2. Never moor your boat to a:
   a. Red-striped buoy
   b. Danger sign
   c. White buoy with a blue band
   d. Solid green and red buoys
   e. a, b, and d

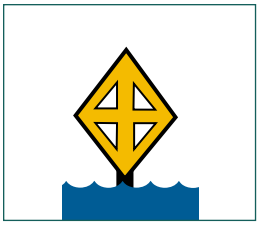
Turn to page 78 for correct answers.

3. A red nun buoy marks:
   a. The safe entrance and exit to a channel
   b. The location of submerged debris
   c. One way traffic
   d. The right (starboard) side of the channel
   e. None of the above

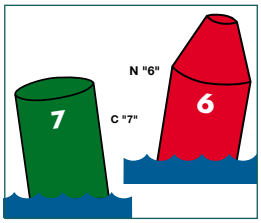
REVIEW QUESTIONS

KNOW YOUR ROAD SIGNS

When navigating on the water, you must be able to read the "road signs." For each of the waterway markers below, write what it means:



1.



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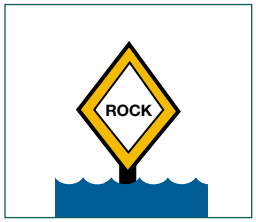
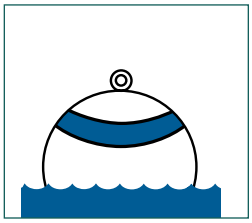
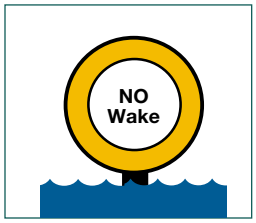


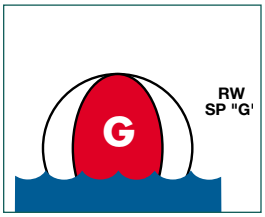
2.



6.



3.



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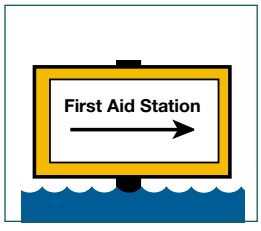


4.

8.

Turn to page 78 for correct answers.

Chapter 3

VESSEL OPERATION

Introduction

Boating can be unpredictable. Every time you get in a boat, you'll face different weather, new adventures — and new hazards. Many things can make or break your day on the water — tides, winds, currents, how your boat performs, and the way you and other boaters act.

Be prepared and know your boat. This chapter will help you operate your boat safely. It includes specific guidelines for different types of boats, including:

✔ Powerboats ✔ Sailboats ✔ Paddle Craft

The better you become at handling your boat, the better you can handle the unpredictable.

OBJECTIVES

You will learn:

- Basic boat anatomy
- Trailering
- Storage of your boat

General operating guidelines and techniques:

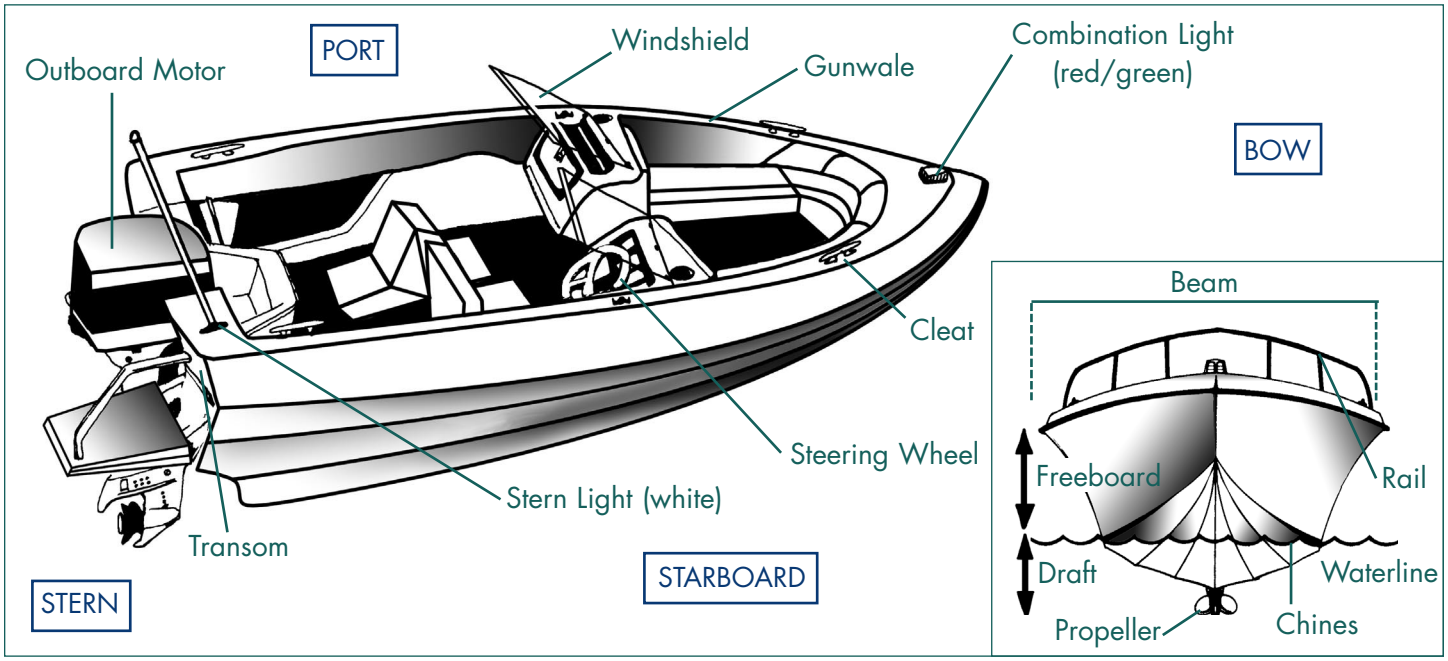
- Fueling
- Docking
- Anchoring
- Maintaining your boat and engine

Specific information on:

- Powerboats
- Water skiing
- Sailboats
- Paddle Craft

The Anatomy of a Boat

Some boat parts have familiar names, such as "windshield," while other parts have names unique to boating. To operate a boat safely, it's necessary to learn the names and locations of the parts of a boat, because you will come across them in manuals, in discussions with other boaters, and on navigation signs and charts. If you do not know the definition of any part, look it up in the glossary at the end of the workbook.



TRAILERING

All trailers owned and operated in the State of California, and used to transport boats of any size, must be licensed by the California Department of Motor Vehicles (DMV).

BOAT SMART

The Boat Must Fit the Trailer

- ✔ The length of the boat determines the length of the trailer.
- ✔ The beam of the boat determines the width of the trailer.
- ✔ Your boat and its contents should not weigh more than 80 percent of the trailer's weight capacity.
- ✔ When the boat is placed on the trailer, make sure that the rollers and supports are adjusted to fit the shape of the boat's bottom. And be sure to secure the boat to the trailer.

Trailer equipment

Your trailer should be equipped with the following:

- ✔ brakes (these are optional, mainly for heavier trailers)
- ✔ lights
- ✔ trailer hitch

Brakes for Your Trailer

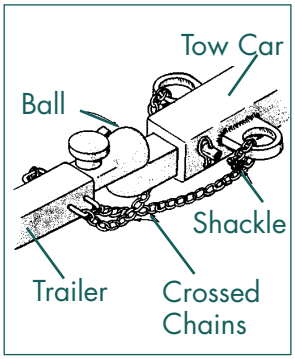
Usually, small trailers do not have brakes of their own. But larger trailers need special brakes. You have three choices in braking systems: surge, electric, and compressed air.

- ✔ Surge brakes work from the trailer's momentum. When you apply the brakes on your vehicle, the trailer surges ahead slightly and the trailer brakes take hold. Trailers equipped with surge brakes also have an emergency release cable that must be attached to the towing vehicle. If for some reason the trailer breaks free of the towing vehicle, the brakes on the trailer will engage.
- ✔ Electric and hydraulic brakes go on when you apply the car's brakes.

Lights for Your Trailer

In California, your trailer must be equipped with taillights, brake lights, turn signals, and clearance lights. If possible, mount your trailer's lights on a removable board, because water, especially salt water, is hard on trailer lights, and some light fixtures are not waterproof.

The Trailer Hitch



A hitch is used to attach the trailer tongue to the ball on the towing vehicle.

- ✔ The ball should be bolted or welded to the towing vehicle.
- ✔ Special heavy-duty equalizing hitches are necessary for trailer tongue or hitch weights of 350 pounds or more.
- ✔ The size of the coupler on the hitch should match the size of the ball exactly. Never use a ball that is too small, because your trailer could separate from the towing vehicle. The weight rating and size in inches should be stamped on the ball.
- ✔ The trailer should be equipped with two strong, rust-free, safety chains. ***The chains should be crossed under the hitch to form an "X"*** when you connect them to the frame of the towing vehicle.
- ✔ Use sealed waterproof electrical connections on the trailer. Wire couplings should be high enough to remain dry when on- or off-loading the boat. Never use the trailer hitch for the ground connection. Instead, use four-pole electrical connectors.

Some things you should know:

You must disconnect taillights from the tow vehicle while getting ready to launch. This allows the bulbs to cool down before they are dipped in the water and prevents a short circuit in the vehicle's electrical system.

The tongue weight on the ball affects the towing vehicle and the trailer.

- ◆ No more than 5 to 7 percent of the total tow weight should be on the hitch.
- ◆ You can distribute weight properly by adjusting the trailer's wheel carriage either forward or backward.
- ◆ If the carriage cannot be adjusted, relocate movable gear in the boat until the trailer is more balanced.

Too much weight on the rear of the vehicle:

- ◆ Raises the front end and makes it difficult to control
- ◆ Affects the steering and traction on front-wheel drive vehicles
- ◆ Raises the focus of the head lights, possibly blinding drivers of on-coming vehicles
- ◆ Reduces the driver's field of vision

Not enough weight on the rear of the vehicle:

- ◆ Will cause the trailer to sway or fishtail
- ◆ Increases the chances that the trailer hitch will separate from the ball

BOAT SMART

Tips for Safe Trailering

Before towing a boat on a trailer, CHECK TO SEE IF

- The locking mechanism on the trailer hitch is properly engaged
- Boat tie-downs are secure and in their proper locations
- The cable that secures the front of the vessel to the trailer is attached and in good working condition
- Trailer safety chains are connected in a criss-cross pattern
- The spare tire is inflated and usable
- The trailer lights are in working condition
- The boat is not overloaded with extra gear, which could affect handling of the towing vehicle

- ✔ Driving with a trailer takes special care and requires practice. Skills that take extra practice include backing up, taking corners and judging braking distances.
- ✔ Avoid sudden stops. Always allow extra distance between your vehicle and vehicles in front of you.
- ✔ Don't brake when the rush of air from a large vehicle pushes the trailer to the side. The trailer will tend to correct itself without braking.
- ✔ When traveling below average traffic speed, you should pull over at the first safe opportunity to permit cars to pass. (California law requires drivers to pull over at the first possible safe location when they are holding up FIVE or more vehicles.)
- ✔ You need more time and distance than usual to overtake and pass another vehicle because the trailer adds weight and reduces acceleration.
- ✔ Change lanes smoothly to prevent whipping the trailer.
- ✔ Stay in the middle of your lane.
- ✔ Take special care when going around corners to avoid making the trailer run over curbs, lamp posts and other objects. The trailer will take the turns in a tighter radius than the towing vehicle.
- ✔ Carry a properly inflated, mounted spare tire and wheel. You will also need a lug wrench and jack for changing the tire. Be sure that the lug wrench and jack matches your trailer, because the size of the bolts and the height of the trailer may differ from your car's.
- ✔ It is illegal and dangerous to carry passengers on the trailer or boat while towing.

BOAT SMART

Trailer Maintenance Tips

Water will rust the metal parts of your trailer, causing these parts to get stuck and/or wear away. It is nearly impossible to keep the rims of the trailer's wheels or the bearings out of water when launching. Maintain the bearings by:

- ✔ Keeping the bearings well greased
- ✔ Allowing bearings to cool first if they must be immersed in water
- ✔ Repacking the bearings when necessary or as recommended by the manufacturer
- ✔ Carrying spare bearings, grease, and tools for replacing the bearings on extended trips
- ✔ It's also a good idea to maintain the lug nuts on the wheels. You can do this by "exercising" or loosening the bolts, and then oiling them. Be sure to tighten them back up!

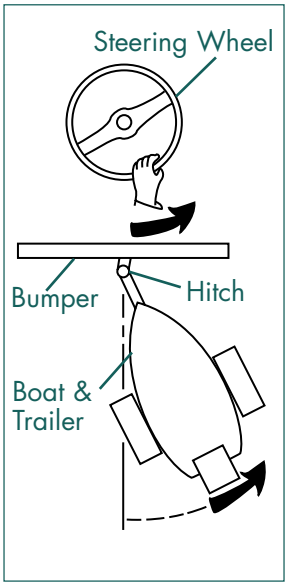
FOR MORE INFORMATION ABOUT TRAILERING, CONSULT WEB SITE:

www.dbw.ca.gov/trailer.htm

BOAT SMART!

Tips for Launching Your Boat

Using a ramp to launch a boat requires practice. An empty parking lot is a good place to practice backing your vehicle with a trailer. Do not practice at a launching area when the parking lot and ramps are busy. To back the trailer into the water, here are some safety tips:



- ✔ The trailer turns in the direction opposite to the direction you turn the steering wheel. To adjust for this, ***place your hand on the bottom of the steering wheel.*** Now, when you turn the steering wheel to the right, the trailer will turn to the right.
- ✔ Be comfortable using your sideview mirrors when backing a trailer.
- ✔ Learn to guess distances when using the mirrors.

Before backing down the ramp, pull off to one side to let the bearings cool for a short time. While waiting:

- ✔ ***Do not remove the boat from the winch cable at this time.***
- ✔ Take off the boat's cover. (It may be necessary to remove the cover before you leave home to reduce wear from wind while driving.)
- ✔ Attach a tag line to your boat so that it will not float away when launched.
- ✔ ***Put the drain plug in your boat.***
- ✔ Remove the tie downs.
- ✔ Unplug the lights.
- ✔ Make sure that the boat's lights and horns are in operating condition.
- ✔ Make sure that necessary rowing, bailing, and safety equipment are on board.
- ✔ Make sure that you have a U.S. Coast Guard-approved, life jacket on board for every passenger.

Launching your boat:

- ✔ Check the ramp to make sure that it's clear.
- ✔ Back the vehicle and boat down the ramp until the boat begins to float. If you do not back down the ramp far enough, the boat will be hard to get off the trailer when you are ready to leave. If you back down the ramp too far, the boat will float off the trailer and might get in someone's way or hit the dock and be damaged.
- ✔ If the ramp has room for more than one boat, back straight down on one side of the ramp. This will make it possible for others to launch or recover their boats at the same time.
- ✔ Do not start the engine until the boat is in the water, because engines that are supposed to be cooled by circulating water may be damaged.
- ✔ Once the boat is off the trailer, you can remove the winch cable.

ALERT

Help prevent the spread of animals and plants that cause a nuisance in California waters. Aquatic plants and animals that are transported to a place where they're not native can cause problems for native organisms and upset the natural ecosystem. ***Remove all aquatic plants and drain water from your boat and trailer when you pull your boat out of the water.*** Aquatic nuisance species in California include water hyacinth, hydrilla, *Egeria densa*, Amur River clam, Chinese mitten crab, European green crab, and the New Zealand Sea Slug.

FOR MORE INFORMATION ABOUT AQUATIC NUISANCE SPECIES, CONSULT WEB SITES:

www.dbw.ca.gov/hydrilla.htm

www.ansc.purdue.edu/sgnis/

Launching your boat: (cont.)

- ✔ Quickly move the boat out of the launching area using the engine or the tag line. Take the vehicle and trailer to the parking area so that the ramp is clear.
- ✔ If you must leave the car while on the ramp, set the parking brake and put blocks under the wheels. If you have a manual (stick shift) transmission, turn off the engine and put the car in gear.

Pulling your boat out of the water:

- ✔ Back the trailer down the ramp so that the trailer is partially under water and you attach the winch cable to your boat. Pull the boat up using the winch so that the bow of the boat contacts the bow rest. Carefully center the boat on the trailer so that it rests on the cradles evenly.
- ✔ Raise and secure the outboard or inboard/outboard engine.
- ✔ Drive up the ramp in low or first gear. If the drive wheels spin, add weight over the drive axle and try again.
- ✔ Take the boat to the staging area and remove the drain plug.
- ✔ Use your tie downs to secure the boat to the trailer.
- ✔ Plug in trailer lights and check to see if they work.
- ✔ Check the tongue, hitch, safety chains, and other parts, as you did before.

Storing Your Boat and Trailer

Proper storage prevents rust, mildew, dry rot, damaged wheel bearings, and weathered tires. Before storing your boat and trailer for the winter season, check out these tips:

- ✔ If you cover your boat with a canvas tarp, prevent mildew and dry rot by allowing air to circulate under the cover. Do not cover your boat before it has dried. Do not use a nylon tarp, because it will trap moisture.
- ✔ If your engine has an "open" cooling system, such as an outboard, flush it with fresh water before storage.
- ✔ If your engine has a "closed" cooling system, check the level of antifreeze and fill the system if necessary.
- ✔ Prevent water from collecting in the gas tank by filling the tank with gas. Add a gasoline stabilizer to prevent gum from forming.
- ✔ Follow the manufacturer's instructions for protecting your engine from winter weather. Wipe all metal surfaces with a lightly oiled rag.
- ✔ Repack the trailer's bearings if necessary and rinse the trailer with fresh water.
- ✔ Remove the drain plug before you store the boat.
- ✔ If the trailer will be stored outside, cover the wheels to prevent sunlight from damaging the tires.

Storage in the Water

If you store your boat in the water:

- ✔ Put chafing gear on the mooring lines to prevent damage.
- ✔ If necessary, adjust the mooring lines for all ranges of the tides and shifting currents.
- ✔ Even if you have a bilge pump, cover the boat because, during heavy rains, the pump battery may wear out and the boat may fill with water and sink.
- ✔ Do not store your boat where ice can form.

BOAT SMART

It is important to check on your boat several times throughout the winter, especially after severe storms.

Tips to Prevent Theft

- ✔ Engrave valuable boating gear with the owner's driver's license number.
- ✔ Photograph or videotape the inside and outside of the boat, showing all installed equipment and additional gear carried.
- ✔ Keep a written inventory of the boat, trailer and equipment. List all electronics, outboard engines, and other gear by brand name, model and serial number.
- ✔ Remove property from the boat after each boating trip.
- ✔ Store the boat and trailer out of sight in a garage, storage shed or backyard.
- ✔ Secure the boat and trailer to a pole or tree with a strong lock and chain.

FOR MORE INFORMATION ON MARINE SECURITY, CONSULT WEB SITE:

www.dbw.ca.gov/marine.htm

REVIEW QUESTIONS: Trailering and Launching a Boat

Answer these questions by circling **T** for true or **F** for false.

1. It is necessary to unplug the brake lights from the trailer before you launch your boat.....T F
2. You should always remove the winch cable from the boat before you back down the ramp.....T F
3. Check the boat for safety equipment and fuel level while it is on the ramp.....T F
4. If your boat is registered, you do not need to license the trailer.....T F
5. When trailering a boat, it takes longer to stop and to pass another car.....T F

Turn to page 78 for correct answers.

General Rules: Operating a Boat

To operate a boat safely, the owner and operator should know what the vessel can do, as well as the general rules for operating boats. The first part of this section presents information that applies to many forms of boating. The second part of the section covers more specific information for water skiing, sailing and paddling.

Before Leaving the Dock

Check the predicted weather and water conditions. Avoid boating in heavy winds, lightning storms, hard rain and thick fog. Make sure the predicted conditions match your boating skills and equipment. Take a portable radio with you to receive updated weather forecasts.

Find out about local hazards by talking to marina operators, other boaters and marine law officers. They can keep you from running aground or hitting hidden obstacles.

FOR MORE INFORMATION ABOUT WEATHER TERMINOLOGY, CONSULT WEB SITES:

www.boatus.com/course/documents/weather.html
www.boatus.com/course/documents/litning.html

FOR CURRENT WEATHER CONDITIONS WHERE YOU ARE GOING BOATING, CONSULT WEB SITES:

www.weather.com/twc/homepage.twc
weather.noaa.gov/weather/ccus.html
cdip.ucsd.edu/

Before you leave for your trip:

- ✔ ***Check*** to see if the boat's lights and horn work properly.
- ✔ ***Check*** all necessary safety equipment.
- ✔ ***Check*** that you have a backup power source and bailing equipment. A backup power source may include paddles, oars or a backup engine.
- ✔ ***Check*** to see that a U.S. Coast Guard-approved personal flotation device (PFD) is on board for every passenger.
- ✔ ***Check*** to see that all gear is stowed in the proper place.
- ✔ ***Check*** the capacity plate for the maximum number of people, maximum weight capacity, and maximum horsepower recommended for the boat. The capacity plate is located near the operator's seat. Make sure you don't put more people or weight on board than it says on the plate.
- ✔ ***Check*** the overall condition of the boat, including the engine, hull and structure.

How many passengers?

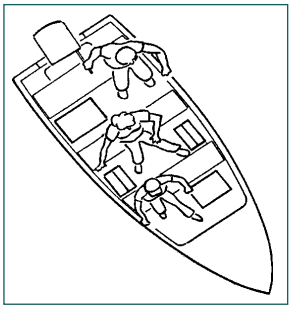
The person-capacity of a boat can be calculated by multiplying the boat length by the boat width, and dividing the answer by 15.

$$\text{Capacity} = \frac{\text{Length} \times \text{Width}}{15}$$

The length of a motorboat is measured from end-to-end along the centerline on the outside of the hull. The measurement does not include outboard motors, brackets, or other attachments, such as a swimmer's ladder. Boat length and width are measured in feet and fractional answers are rounded DOWN to the next number of persons.

QUESTION

If a boat is 16 ft. long and 6 ft. wide, how many passengers can it carry?



Answer: 6

Before you leave for your trip: (cont.)

- ✔ ***Check*** that all passengers know where PFDs and safety equipment are stored. You should show passengers how to use all the equipment.
- ✔ ***Check*** to make sure your passengers know what to do in case of an emergency. Show them if they don't know.

Things to remember:

- The operator of a boat with an enclosed engine compartment should run the blower for four minutes.
- When boarding a small boat, passengers should step to the middle of the boat and sit down immediately.
- Keep the mooring lines secured to the dock while passengers are climbing aboard the boat.
- If the boat is small, be sure every person sits down, and the gear is stowed so that the boat is balanced.

BOAT SMART

Finally

- ✔ ***Check*** to see that you have enough distance (freeboard) between the waterline and the gunwale. If not, your boat is overloaded.
- ✔ ***Check*** the direction of the wind and current.
- ✔ ***Check*** the area to make sure it is clear of other traffic. Proceed slowly to reduce the wake and observe wake-free zones (5 mph).

BOAT SMART

When Underway

- ✔ ***Check*** the lines. Trailing lines in the water can foul the propeller and damage the engine.
- ✔ ***Check*** the speed. Always travel at a slow speed (5 mph.) when you're close to swimmers, docks, piers, or crowded boat ramp areas.
- ✔ ***Check*** navigation rules and signs.
- ✔ ***Check*** both sides and aft before turning.
- ✔ ***Check*** meters and gauges frequently while underway.
- ✔ ***Check*** the weather. A good way to get weather reports is to use a marine band radio. Tune to 162.55 MHz or 162.4 MHz, or tune to local U.S. Coast Guard radio stations.
- ✔ ***Check*** the charts for the local area for underwater objects, shoals, shipping lanes, and other hazards.
- ✔ ***Check*** that everyone is properly seated and that the boat is balanced. It's not safe to have passengers riding on the bow, gunwales or transom of a boat.
- ✔ ***Check*** to make sure you reduce your wake. You are responsible for any damage to other boats and property caused by your boat's wake.

BE COURTEOUS

Courtesy is essential for safe boat operation, and a major way to prevent accidents.

You should:

- Know the right-of-way rules and respect the right-of-way of others.
- Limit noise.
- Lower your speed to reduce your wake around others.
- Do not spray other boats, water skiers, or bathers with your wake.
- Keep a safe distance from docks, bathers, and fishing boats.

Reckless or Negligent Operation

California law says no one may operate a boat, water skis, an aquaplane or other vessel in a way that will be dangerous to people and property. Dangerous examples include:

- ✔ Riding on the bow, gunwale or transom of a moving vessel when you're not protected by railings
- ✔ Riding your vessel over the tow-line of another vessel or its skiers
- ✔ Steering your vessel between another towing vessel and the skiers or freight it's towing
- ✔ Boating while under the influence of drugs or alcohol
- ✔ Boating around swimmers
- ✔ Boating too fast in a crowded area, or in thick fog and heavy storms
- ✔ Speeding in restricted areas, "buzzing" or "wetting down" others, or skiing when or where you're not allowed to

KNOW YOUR LINES

Mooring lines are used to secure a boat to a dock. These lines should be long enough to allow the boat to rise and fall with the tide or flow of the water, but not so long that the boat strays too far from the dock.

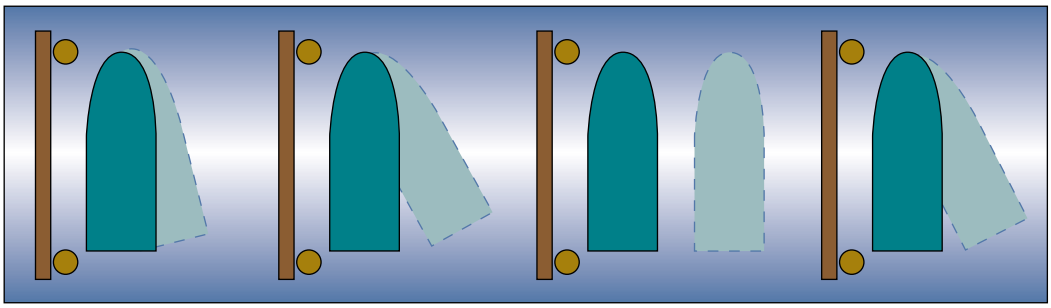
- Bow line. The bow line leads forward from the bow to the dock.
- Stern line. The stern line leads backward (aft) from the stern to the dock.
- Spring lines. The spring lines lead aft from the bow and forward from the stern. You typically use spring lines in rough water conditions.

Docking

- ✔ ***Check*** the current and wind direction so that you can ease the boat into the dock. It's easiest to land at a dock when you are heading into the current and/or wind.
- ✔ ***Check*** your docking skills. Practice docking to an anchored float in open water. This will help you understand how wind and current affect the handling of your boat. For a temporary low-cost float, use an empty plastic milk jug anchored with a line and small weight.

Tips for Tying Up

- ✔ ***Check*** the tide level so you can make allowances when mooring your boat to a stationary pier. If the tide is high, remember to leave enough slack in the lines to adapt to low tide.
- ✔ ***Check*** the type of dock you are using. If it is a floating dock, it will rise and fall with the tides and water level. In this case, you should secure your boat tight to the dock.
- ✔ ***Check*** and secure the bow, stern and spring lines before leaving the boat.
- ✔ ***Check*** the fenders. Make sure they are placed properly between the boat and the dock.



Without wind or current.
Approach the dock slowly at a 10°–20° angle. Have fenders in place and mooring lines ready. If someone is on the dock, have them secure your bow line.

With wind or current from the dock.
Approach the dock at a sharper angle. Secure the bow line and use the motor to guide the stern in.

With wind or current toward the dock.
Approach parallel to the dock and let the wind or current push you to the dock.

Into the wind or current.
Approach the dock in a gradual turn at the slowest speed possible, bring the boat up parallel with the dock and stop with a touch of reverse power. Secure the bow line first.

Tips for Leaving the Dock

If the wind or current is pushing away from the dock, release the lines and shove off. When clear of the dock and other boats, put the engine in forward gear and move ahead slowly.

If the wind is holding the boat to the dock, or if other boats are in the way, you may need to use the bow line to help you depart. Tie one end of the bow line to the boat, run the line around the bollard or piling, and bring the other end aboard. Wrap the end around a cleat once or twice. Turn the helm to carry the stern away from the dock. When the boat is at a right angle to the dock, release the bow line and bring it aboard. Put the engine in reverse, and back away until you are clear of the dock and other boats.

If the wind is blowing from the bow, you should have no problem casting off unless the wind is very strong. If the wind is strong and makes casting off hard, have someone else release the bow and spring lines. Push the bow away from the pier and go forward. When the boat is clear of the dock, release the stern line and bring it aboard. Be careful to keep the stern line from tangling in the propeller.

REVIEW QUESTIONS: General Rules for Operating a Boat

Answer these questions by circling the letter representing the correct answer.

Turn to page 78 for correct answers.

1. Before leaving the dock, the boat operator should:
   a. Check the water and weather conditions.
   b. Check the safety equipment.
   c. Stow all gear in the proper place.
   d. Obey the capacity plate information.
   e. All of the above.

2. To check weather conditions:
   a. Read the newspaper, check the Internet, call the National Weather Service, and/or monitor radio transmissions.
   b. Call the U.S. Coast Guard.
   c. Observe the weather in the morning.
   d. It's not necessary if you're not going out on the ocean.
   e. None of the above.

3. A spring line is:
   a. A line made with elastic so the boat can ride up and down on the tide.
   b. A line that can be used in place of a bow or stern line.
   c. A line that is used for the anchor.
   d. A line that leads aft from the bow or forward from the stern.
   e. None of the above.

4. When docking a boat:
   a. Secure bow, stern, and spring lines before leaving the boat.
   b. If possible, land into the wind and current so the boat can ease into the dock.
   c. Keep one foot in the boat and one on the dock to steady the boat.
   d. Tie the lines as tightly as possible so the boat does not drift into another boat or person.
   e. Both a and b.

FUELING

Always use extreme caution when fueling a boat. Gasoline vapors are more explosive than dynamite and they're heavier than air. The vapors may sink to the bottom of the boat or collect in the bilge. These vapors may explode when exposed to a spark or open flame.

A HELPFUL HINT

Your nose is the best tool for finding gasoline vapors and preventing an explosion. Every time BEFORE you start your engine, operate your blower for at least four minutes, and then smell for fumes.

BOAT SMART!

Safe Fueling Tips

- ✔ Always remove portable tanks from the boat for refueling.
- ✔ Shut off motors that can make a spark or generate heat.
- ✔ Turn off electrical equipment and liquid propane tanks.
- ✔ Close all ports, hatches, and openings before fueling. This prevents vapors from seeping into the boat and settling in the bilge.
- ✔ Try to fuel before night. If you need a light to refuel, use a flashlight or a spark-proof light.

Safe Fueling Tips cont.

- ✔ Never smoke while fueling or when you're close to a fuel dock.
- ✔ ***When fueling, place the fuel nozzle in contact with the fill pipe or tank.*** This prevents a buildup of static electricity which could produce a spark.
- ✔ Maintain the contact between the fuel nozzle and the fill pipe or tank until fueling is completed.
- ✔ After fueling, wipe up all spilled gasoline and air the rags after using. Never throw the rags into the boat or the water.
- ✔ Before starting the engine, you must draw or force gasoline vapors out of low pockets in the bilge. Open all doors, windows, ports and hatches. If you use fans to circulate the air in the cabins and bilges, use only explosion-proof fans with spark-proof switches. To clear the air in the bilge properly, turn on the power blower for ***at least four minutes.***
- ✔ Check all fuel lines and connections for leaks. Sniff around gas lines, motor, and bilges. Do not start the motor until the vapors are gone.
- ✔ Prevent water pollution by being careful with oil and fuel near the water. Even a small amount spilled into the water can pollute a large area.

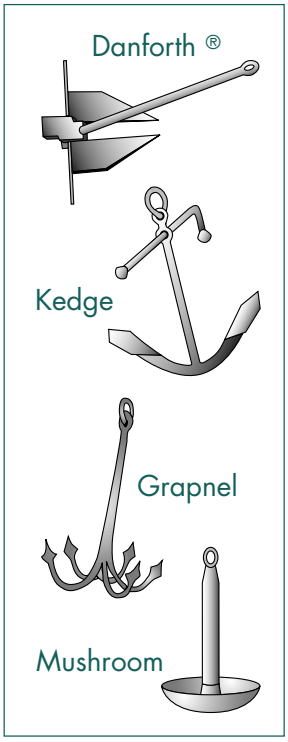
BOAT SMART

Prevent fueling spills

- ✔ Think in terms of preventing even a drop of fuel from going into the water, especially when fueling at a fuel dock or along the shoreline.
- ✔ Avoid overfilling — fill the tank slowly to avoid a spill. Remember, excess fuel will flow out the vent (and into the water) when it becomes warm and expands. It's best to fill the tank away from the water.
- ✔ Never leave a gas hose unattended while refueling. Remember, the automatic shutoff on the gas nozzle may not work.
- ✔ Be sure that all fuel system fittings are tight and not leaking.
- ✔ Don't drain oil into the bilge.
- ✔ Recycle used oil through your marina, community oil recycling center, or at an automobile oil change business.

REMEMBER

Discharging any oily water, oil, or petroleum product into the water is against state and federal law. You are responsible for cleanup costs and correcting any environmental damage caused by your fuel spill, under the California Oil Spill Prevention and Response Act of 1990.



ANCHORING

Using the appropriate anchor and anchoring techniques will prevent collisions, grounding, and drifting.

Some things you should know:

The type of anchor you need depends on where you're anchoring your boat.

- Danforth® anchors work best in clay, sand and mud.
- Kedge anchors are the best type to use in weeds or grass.
- Grapnel anchors work best on a rocky bottom.
- Mushroom anchors give a temporary hold in sand or firm mud.
- An anchor rode is a line, cable and/or chain. The chain helps keep the anchor parallel to the bottom so it can "dig in." Any vertical movement of the boat from wave action is "absorbed" by the rope and chain, leaving the anchor intact.
- Nylon makes a good anchor line because it stretches and acts like a shock absorber during strong current, wind, or wave action.

BOAT SMART

When You Anchor

- ✔ Select a protected spot. Try to find a spot where obstacles or debris on the bottom will not snag the anchor or rode.
- ✔ Head the boat into the wind or current.
- ✔ Back the engine so that the boat is moving astern very slowly. Then put the engine in neutral.
- ✔ Keep the engine running. If the engine is not running, you will lose control of the boat, and you may run aground or collide with a dock or other boats.
- ✔ Lower the anchor over the bow. **Never throw it.**
- ✔ As the anchor lowers, let out (or pay out) line.
- ✔ Make sure your foot or other objects on deck do not get caught in the line as it is paying out.
- ✔ For secure anchoring, the scope of the anchor line should be at least seven to one — that means the line will be seven to ten times as long as the distance from the boat's bow to the bottom of the water.
- ✔ Check the boat's swing to make sure the boat will not go aground or hit something if the current changes or the wind shifts.

Something you should know:

The anchor is set when the boat turns into the wind and the anchor line stops paying out or jerking. For safety:

- ✔ ***Check*** to see if the anchor is holding, not dragging. The line will bounce if the anchor is dragging.
- ✔ ***Check*** your position by noting several landmarks.

Something you should know: cont.

- ✔ ***Check*** your anchor. Never anchor from the boat's side or stern. A strong current, a heavy sea, or the wake from another boat may sink your boat.
- ✔ ***Check*** your position often, especially since tides, wind, and weather can change constantly.
- ✔ Never anchor in a deep water channel between red and green buoys that mark the heavily traveled areas or channels used by large ships.
- ✔ Never anchor directly below a dam, because the hydraulic currents created by the rising or falling water can be hazardous.
- ✔ Never anchor directly above a dam. A sudden release of water from a hydroelectric power plant can suck the boat over the dam.
- ✔ Warning markers, such as a boom or buoys, often indicate restricted zones for traffic and anchoring. Check your charts for these restricted zones.
- ✔ If you have to leave the anchor, tie a floating marker to the line so you can locate it later.

REMEMBER

Careful boaters always have extra line, chain and anchors along, just in case!

BOAT SMART!

When it's Time to Leave the Area

- ✔ Head the boat toward the anchor.
- ✔ Go ahead slowly using the engine while you retrieve the line.
- ✔ When the boat is over the anchor, stop the boat — but not the engine — and lift the anchor.
- ✔ Carefully stow the anchor and line so it will be ready for the next use.
- ✔ NEVER pull up the anchor without starting the engine first.

FOR MORE INFORMATION ABOUT ANCHORING, CONSULT WEB SITE:

www.dbw.ca.gov/resourc.htm

and click on "Anchoring"

Something you should know:

If the anchor does not come free:

- ◆ Tie the anchor line to a cleat and go forward slowly.
- ◆ If the anchor still does not come free, circle slowly and try to loosen the anchor. Be careful to keep the line from wrapping around the propeller.
- ◆ Try to free the anchor from several different angles — and don't give up easily. The chain or the anchor may be hung up. Don't put the boat or passengers in danger.

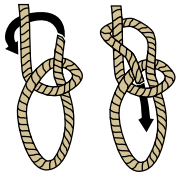
BOAT SMART!

Common Mistakes

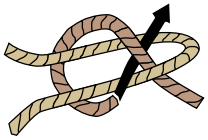
- ✔ Letting the anchor go without securing the line to the boat — ***oops, lost the anchor!***
- ✔ Letting the anchor go with the anchor line wrapped around gear or the foot of a passenger — ***oops, lost the passenger or the gear!***
- ✔ Poor communication between the boat operator and the person setting the anchor — ***oops, dropped the anchor at the wrong time!***

Square

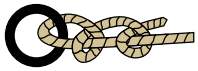
Bowline



Anchor Bend



Two Half-Hitches



Clove Hitch

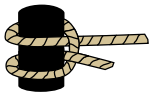
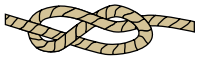


Figure Eight



Know Your Knots

You should learn six basic knots useful for many kinds of boating:

- ✔ The square knot is simple to make. The square knot is used for light-duty work.
- ✔ The bowline, handiest of the knots, is probably the most difficult of the six. It is used when an eye (or loop) is needed. The bowline will not slip or jam and is easy to untie, even after the knot has been under a lot of stress.
- ✔ The anchor bend is used to fasten a line to a ring or anchor. It's also called a fisherman's knot.
- ✔ The half-hitch is the simplest knot. It is usually part of another knot.
- ✔ The clove hitch is simply two loops with an end tucked under. This knot is used to temporarily secure a boat to a piling or similar structure. To secure the boat for longer periods, use two half hitches to lock the clove hitch.
- ✔ The figure eight knot is used mostly as a stopping knot. Place it at the end of a line to keep it from running through a block, jam cleat, or other opening. The figure eight can be used temporarily to keep a line line from unraveling.

DO YOU KNOW WHAT A MARLINESPIKE IS? TO FIND OUT, CONSULT WEB SITE:

www.dbw.ca.gov/resourc.htm and click on "Marlinespike"

FOR KNOT TYING DEMONSTRATIONS, SEE WEB SITE:

131.230.57.1/knots.htm

Maintaining Your Boat and Engine

Maintain your boat and engine so you'll be safe. Your boat and engine will also last longer so you'll have more fun on the water.

TAKE NOTE

When cleaning your boat and its engine, don't pollute the water with your cleaning products.

- ✔ Check the inside and outside of the hull when your boat is out of the water.
- ✔ If you have an aluminum hull, sand the white rust spots with fine sand paper until the metal is shiny again.
- ✔ If you have a fiberglass hull, use gentle soap to remove oil and algae. Fix holes with fiberglass patch compound.
- ✔ Hang canoes upside down.
- ✔ Keep lines and ropes clean and out of the sun when you're not using them. Dirt, sand and sun wears them down. Replace old ropes.
- ✔ Sew or tape torn and frayed sails.
- ✔ Follow the maintenance schedules found in the boat owner's manual.
- ✔ Keep the engine tuned and the battery charged.
- ✔ Check the oil and fluid levels before each trip.
- ✔ Change the oil regularly. Older engines need oil changes more often.
- ✔ Keep the battery connections clean, tight and corrosion free.
- ✔ Keep the engine clean. Oil and grease buildup can soak up moisture and short out your electrical system.
- ✔ Check belts, bolts, hoses, nuts and screws for proper fit. Tighten, repair or replace bad parts.

REVIEW QUESTIONS: Fueling, Docking, Anchoring, Knots and Maintenance

Answer these questions by circling **T** for true or **F** for false.

Turn to page 78 for correct answers.

1. If you have a ventilation system, it is not necessary to close all ports, hatches and openings before refueling.....T F
2. An anchor rode is a shelf that holds the anchor while the boat is underway...T F
3. Never anchor within a restricted zone near a dam .....T F
4. Never anchor from the boat's side or stern.....T F
5. When you are ready to leave, head the boat away from the anchor .....T F
6. The knot most commonly used for light duty is the square knot .....T F
7. Your boat will last longer if you maintain it. .....T F
8. You should check oil and fluid levels only once each season.....T F
9. You don't have to worry about oil and grease buildup on an engine.....T F

POWERBOATING

Powerboats have many different types and uses, with a variety of engines and hull designs. See page 35 for general boat anatomy.

Power boats come in classes, determined by length, and each class has its own set of rules and regulations for trailering and required safety equipment. More than half the recreational power boats in California are less than 16 feet long. The four classes common to recreational boating are:

1. Less than 16 feet
2. 16 feet to less than 26 feet
3. 26 feet to less than 40 feet
4. 40 feet to no longer than 65 feet

TAKE NOTE

Inflatables are a special type of boat. Some inflatable boats have a rigid hull. They are very stable and can carry significantly larger loads than traditional boats of a similar size. They are fre-quently used as dinghies or sport boats, and may be towed astern, hoisted by davits, stored on deck, or deflated and stored in a locker. They may be powered by outboard motors or oars. Inflatables use several air chambers to prevent disaster if one chamber is punctured.

BOAT SMART!

Types of Engines

Powerboats can be propelled by outboard, inboard, or stern-drive motors, also known as inboard/outboard motors. An outboard motor clamps directly to the transom or can be mounted using special brackets. Outboard motors range in size from 2 to 275 horsepower. Outboard engines run on either gasoline or battery power.

Inboard engines are much like automobile engines, using either gasoline or diesel fuel. These engines are usually mounted in the middle of the boat (amidships) and are connected to the propeller by long shafts.

Similar to inboard motors, stern driven engines are like automobile engines. They fit into the hull, and connect to a drive unit attached to the outside of the transom. The drive unit, called the lower unit or outdrive, is like the lower half of an outboard motor.

Jet drive engines consist of a pump that draws water into a housing where it shoots out at high pressure through a steerable nozzle. This jet of water propels the boat. Most personal watercraft use jet drive engines. You'll find details about personal watercraft in Chapter 4.

Cooling Systems

Most engines use "open" cooling systems. The engine draws water in, circulates it to cool the engine, and empties the water through the exhaust system or through a small opening above the water line. If the intake is clogged with debris, or the water pump fails, you will not see a stream of water coming from the opening while the engine is being used.

Some inboard and stern drives operate with a "fresh water" cooling system. This is a closed system that works like the cooling system in an automobile. A heat exchanger cools the water, working like a car's radiator. This cooling system can reduce corrosion when the boat operates in salt water.

CAUTION

Be careful of debris in the water. If you clog the cooling water intake, the engine will overheat. You should check cooling systems that empty the water into the exhaust if you accidentally drive the boat through weeds or kelp. To clear the intake, run the engine in reverse gear when in clear water.

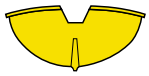
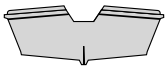
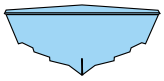
Personal watercraft and other jet-drive engines clog easily when you operate them in shallow water.

Prevent internal engine corrosion by flushing out the cooling system with fresh water after you operate your boat in salt water.

Hull Designs

Powerboats have two kinds of hulls — displacement or planing hulls. Powerboats with displacement hulls move through the water, and require more power to push through the water. Powerboats with planing hulls skim over the water and travel at higher speeds. Planing hulls work best when boats operate on calm or flat water. All hulls are displacement hulls when boats run at low speeds.

Powerboats also have five types of hull designs. The following chart outlines advantages and disadvantages of each design:

Types of Hulls	Advantages	Disadvantages	Examples
Flat bottom 	shallow draft plane easily	excessive pounding at high speeds	jon boats, small utility boats, racing runabouts
Round bottom 	move easily through water at slow speeds	somewhat unstable	sailboats, canoes, some trawlers
Vee 	smooth ride in choppy water	require more power to move at same speeds as flat bottom	some small utility boats and runabouts
Deep vee 	smoother ride in choppy water	require even more power than vee hulls	most runabouts cruisers and ships
Multi-hull 	provide great stability in most conditions	some multi-hull boats have reduced maneuverability	catamarans, trimarans and houseboats

Powerboats come in many types. Utility or jon boats are widely used for fishing and hunting in protected waters. Runabouts are commonly used for fishing, water skiing, and cruising. Cruisers offer more room and special features, such as cuddy cabins, berths, heads, and galleys. Personal watercraft (PWC) are for recreation or light duty.

Choose your boat carefully

You should select a boat by how you plan to use it. For example, a flat-bottomed boat is not safe on the ocean, and boats with a deep vee hull will have difficulty navigating in shallow water. Choose a boat according to:

- The intended boating activities or special purposes
- The bodies of water where you'll operate the boat
- Your skill level

Before leaving the dock, start the engine while you are double-checking your boat and its safety gear. This will give the engine time to warm up.

- ✔ ***Check*** the weather reports. Look for any threatening clouds such as thunderheads or approaching fronts.
- ✔ ***Check*** the boat, engine, and fuel lines for leaks.
- ✔ ***Check*** the battery, motor and propeller to make sure they work properly.
- ✔ ***Check*** the fire extinguishers, ventilation system, and other safety equipment to make sure all of them are working properly.
- ✔ ***Check*** the oil and fuel levels. Plan on using no more than one-third of the fuel to reach your destination. To be safe, use one-third of the fuel going out, one-third to return, and keep one-third as a reserve.
- ✔ ***Check*** the first aid kit.
- ✔ ***Check*** the anchor and line.
- ✔ ***Check*** the radio to make sure it's working.
- ✔ ***Check*** for your backup power source (oars, paddles, or a motor) and bailing equipment.

DID YOU KNOW?

You can receive a free, vessel safety check without risk or obligation. Specially trained members of the U.S. Coast Guard Auxiliary and U.S. Power Squadrons provide this service for recreational boats. Call 1-800-869-7445.

FOR MORE INFORMATION ABOUT COURTESY VESSEL EXAMINATIONS, CONSULT WEBSITE:

www.cgaux.org/public/pubframe.htm

Things to remember:

If the trip is taking you offshore or to a remote region:

- ◆ Always file a float plan with the local marina and a friend or relative. Remember to notify them when you return.
- ◆ Take along tools and spare engine parts. Useful tools include wrenches, screwdrivers, duct tape, a hammer, and vise grips. Spare parts include spark plugs, a fuel pump, fuel filter for diesel engines, lubricant and drive belts.
- ◆ Have a back-up VHF radio and/or a cellular phone.
- ◆ Bring foul-weather clothing and survival suits in cold-water regions.

Hunting and Angling

People who hunt or fish from boats are also considered boaters. Too often, hunters and fishers give little thought to their safety and equipment required for their boats. Their lack of boating preparation can end in tragedy.

When using a boat as a sporting platform, give special thought to the boat's proper loading and balance. Obey the weight and passenger restrictions listed on the capacity plate. Avoid standing, and keep the boat balanced. And wear a properly fitted U.S. Coast Guard-approved life jacket.

FOR MORE INFORMATION ON HUNTERS AND ANGLERS, CONSULT WEB SITE:

www.dbw.ca.gov/publications.htm

Learn to Make Emergency Repairs

PROBLEM:	POSSIBLE SOLUTION:
Broken Drive Belt	Tie a piece of line around the pulleys and secure with a square knot.
Broken Pipe or Hose	Wrap the break with duct tape.
Engine Failure	Check the portable fuel tank for vapor lock. Check to see if seaweed, rope, or fishing line has fouled the propeller or if the drive pin has been sheared.
Engine Oil Leak	Catch the oil in a pan and pour it back into the engine.

BOAT SMART

A Practical Guide to Gauging the Distance

When you don't see speed limit signs, operate the boat so that it will not endanger others. In general, speed is limited to 5 miles per hour within 200 feet of a beach with bathers … a swimming or diving platform … or a landing or dock where boats are tied up or which passengers are using … or 100 feet of bathers in the water.

- A distance of 200 feet is two-thirds the length of a football field.
- A distance of 100 feet is one-third of a football field.

While Underway

- ✔ ***Check*** to make sure passengers are not riding on the bow or gunwales.
- ✔ ***Check*** the posted speed signs — move slowly when near the shore or crowded areas.
- ✔ ***Check*** crowded areas for collision hazards, especially in fog or storms.
- ✔ ***Check*** for and obey "no wake" signs. You may have to pay for for damage caused by your wake.
- ✔ ***Check*** for any posted local laws or regulations.
- ✔ ***Check*** for wood, plastic bags, seaweed, or anything else that may foul the propeller or jet pump.

Some things to remember:

In smaller boats, passengers should not stand up or move around. If a passenger must move to another seat, make sure that:

- The skipper is informed of passenger movement
- The passenger holds onto the gunwales
- The passenger keeps his center of gravity as low as possible
- The other passengers or gear are moved to counter-balance the shift in weight

REVIEW QUESTIONS: Powerboating

Answer these questions by circling the letter representing the correct answer.

1. If the boat engine overheats:
   a. Don't worry — engines on small boats run hot.
   b. Change the coolant from an open to a closed system.
   c. Check the cooling water intake to make sure it is free of debris.
   d. Enrich the fuel mixture.
   e. Both b and c

2. When getting ready to leave the dock: (assuming you have little wind or current)
   a. Keep the mooring lines secured to the dock while boarding and starting the engine.
   b. Check the area to make sure the boat can proceed safely.
   c. Just back away from the dock.
   d. Release the lines, shove off, and put the engine in forward gear.
   e. a, b, and d

3. To make sure you have enough fuel to return from your trip:
   a. Know where all the marine fueling stations are located.
   b. Monitor your fuel level: allow one-third to go out, one-third to return, and keep one-third in reserve.
   c. Carry two extra gallons of gasoline in safety-approved gasoline cans.
   d. Thin the fuel mixture to make sure it lasts longer.
   e. Both a and b

Turn to page 78 for correct answers.

Water Skiing

CAUTION

If the weather or water is cold, water skiers should wear wet suits under their life jackets. A wet suit also provides padding for protection from falls.

If a water skier falls:

- 1,000 feet in front of a ship sailing at 10 mph, the skier has one minute to get out of the way.
- 500 feet in front of a ship sailing at 10 mph, the skier has 30 seconds to get out of the way.

QUESTION

A water skier falls 1,000 ft. in front of a boat cruising at 20 mph. If the crusing boat doesn't see the fallen skier or the raised ski flag, the skier could get hit. How many seconds does the skier have to get out of the way?

Answer: 30 seconds

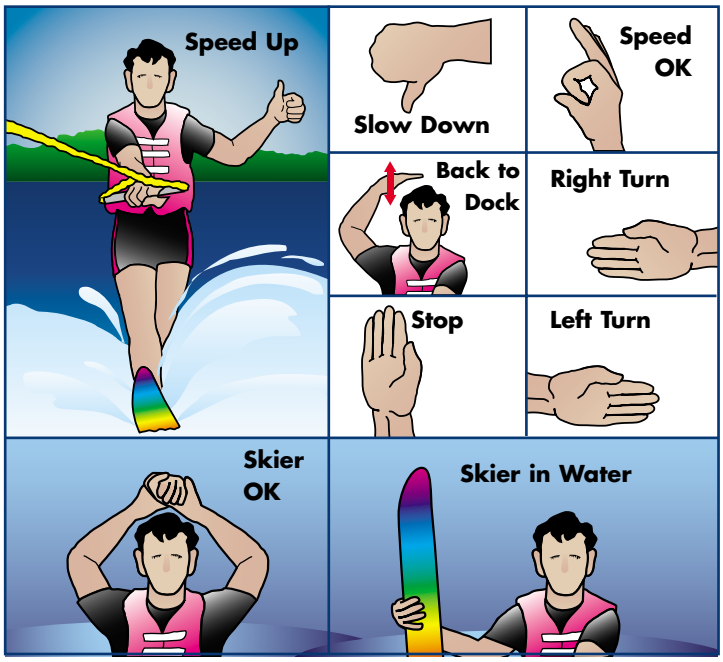
Water skiing, a popular sport for powerboat owners, requires extra precautions. Ski boat operators must travel at high speeds and make tight turns, frequent stops, and sudden starts. And skiers are always in the water. At the very least, a water ski team must consist of a boat operator, an observer, and a skier.

Equipment

- ✔ ***Check*** to see that any person being towed behind the vessel **is wearing** a Coast Guard-approved Type I, II, III, or V life jacket. Exceptions: the law does not apply to performers engaged in professional exhibitions, official regattas, marine parades, or tournaments. Any person engaged in slalom skiing on a marked course, or barefoot, jump, or trick water skiing, may instead wear a wetsuit designed for the activity and labeled by the manufacturer as a water ski wetsuit. A Coast Guard-approved Type I, II, III, or V life jacket must still be carried on board for each skier choosing to wear a wetsuit. Inflatable personal flotation devices are not approved for use while water skiing.
- ✔ ***Check*** to see if a ski flag is on board. The flag must be orange or red and at least 12 inches square or rectangular. You must use this flag to warn other boats about gear or skiers in the water.
- ✔ ***Check*** to see that the ski rope is at least 75 feet long.

Safety Rules

- ✔ ***Check*** to see that at least three people are present when water skiing — the boat operator, the observer, and the skier.
- ✔ ***Check*** to see that you are water skiing at legal times. Remember, water skiing is not allowed from sunset to sunrise.
- ✔ ***Check*** to see that water skiers know the correct hand signals.
- ✔ ***Check*** to see that the boat operator is at least 16 years old, if unsupervised.
- ✔ ***Check*** to see that the observer is at least 12 years old.
- ✔ ***Check*** that the ski area is not crowded.



Water Skiing Hand Signals

Team Guidelines

Each member of a water ski team — the boat operator, observer and skier — has an important role to play:

Boat Operator

- ✔ Practices caution to make sure the skier, tow rope and other equipment is well away from the boat's propeller
- ✔ Looks well ahead for other boats, skiers, the shoreline and other obstructions
- ✔ Gets information from the observer

Observer

- ✔ Clearly signals the skier's activity to the boat operator
- ✔ Raises the signal flag when equipment, such as the ski rope or skis, is in the water
- ✔ Raises the signal flag when the skier is down in the water for any reason

Skier

- ✔ Knows and uses hand signals to communicate with the observer
- ✔ Watches for floating debris, other boats, and other obstructions
- ✔ Raises his skis perpendicular in the water to indicate to other boats that a skier has fallen

Some things to remember:

- ◆ Do not spray swimmers or boats with boat wake or ski spray.
- ◆ Do not jump the wake of a boat within 100 feet of that boat.
- ◆ Operate the ski boat in a counter-clockwise direction, unless forbidden by local law.
- ◆ Avoid making sharp turns in designated traffic areas.

REVIEW QUESTIONS: Water Skiing

1. It is against the law to water ski: (choose one)
   a. When the water is calm
   b. Between sunset and sunrise
   c. When no other water skiers are around
   d. When you are 12 years or older
   e. When you are in open water

2. Unless otherwise posted, the standard direction to drive a ski boat is counter-clockwise.....T F

Turn to page 78 for correct answers.

Sailing

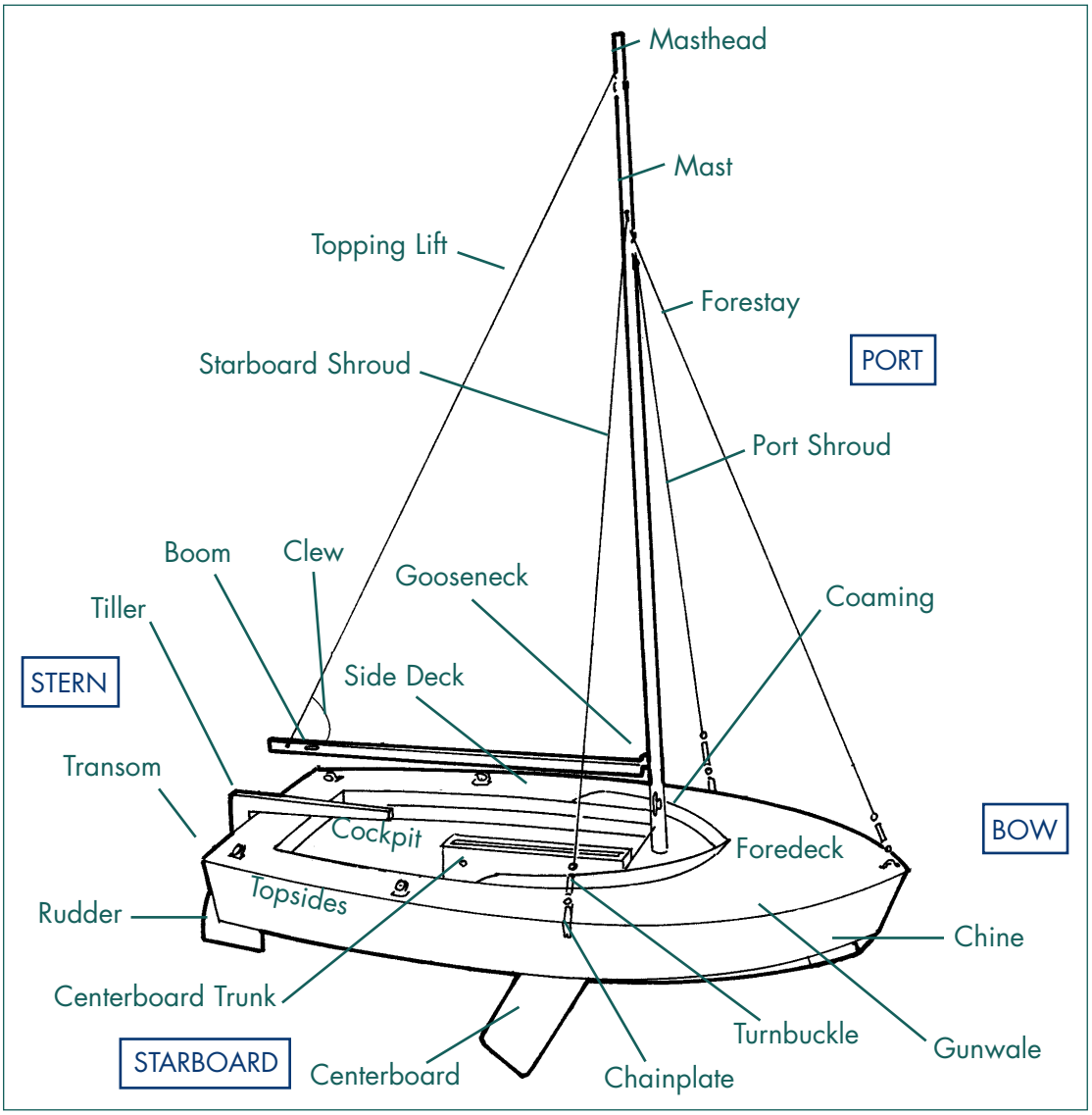
TRIVIA

The America's Cup, dating from 1851, is the oldest trophy in international sport and is sailing's most coveted prize.

Sailboats come in a variety of sizes and designs and have four basic parts: the hull, sails, centerboard or keel, and rudder. The hull is designed to carry the crew, support the mast and rigging, and to move the boat through the water easily. The sails provide the power. The centerboard and the keel help keep the boat stable, so it won't get pushed sideways by the wind. The rudder steers the boat.

Smaller sailboats, commonly called day sailors, usually have flat bottoms or vee-shaped hulls. On a smaller sailboat, the rudder is mounted on brackets at the stern. The rudder has a wooden or metal bar called a tiller that is used for steering. When the tiller is turned one way, the boat moves in the opposite direction. For example, if you push the tiller to starboard the boat will turn to port. Using the tiller to steer the boat may take some practice.

As the size of the sailboat increases, so does the equipment. Large cruising sailboats come in a variety of mast and sail designs, and most have backup engines. Most larger sailboats have round bottoms and fixed keels. Larger boats use wheels instead of tillers to steer. The boat turns in the same direction that the wheel is turned.



BOAT SMART

Before Leaving the Dock

- ✔ ***Check*** out your skills by taking sailing lessons or sailing with someone who is experienced.
- ✔ ***Check*** to see if passengers are wearing properly fitted, U.S. Coast Guard-approved life jackets.
- ✔ ***Check*** your clothing. Wear clothing in layers. Wear protective clothing, such as wind breakers, and deck shoes that provide traction on wet surfaces.
- ✔ ***Check*** the radio or cellular phone to make sure it's working.
- ✔ ***Check*** your protective equipment. Wear UV-rated sunglasses and apply sun block to exposed skin.
- ✔ ***Check*** the weather conditions.
- ✔ ***Check*** the safety equipment. Be sure you have a fire extinguisher aboard and that it's working. Check to see if you have rowing equipment in case of a power loss.
- ✔ ***Check*** the sails and rigging for rips, tears or damaged clews.

BOAT SMART

If the Boat Has an Engine

- ✔ ***Check*** the backup engine, making sure the motor and propeller are in operating condition.
- ✔ ***Check*** the fuel and oil levels.
- ✔ ***Check*** the engine and fuel lines for leaks.

TAKE NOTE

When a sailboat uses a backup engine, it is considered a powerboat and must observe the rules of navigation and operational guidelines for powerboats.

FOR MORE INFORMATION ABOUT THE AMERICA'S CUP, SAILING TRIVIA, AND OTHER SAILING RACES, SEE WEB SITE:

http://www.ac2000.org/cup/aboutac.html

REVIEW QUESTIONS: Sailing

Answer these questions by circling T for true or F for false.

1. You push a tiller in the opposite direction from the direction you want to go.....T F
2. It is not necessary to wear a personal flotation device on larger sailboats because they almost never sink.....T F
3. All sailboats have backup engines.....T F

Turn to page 78 for correct answers.

Paddling

Paddle craft — including canoes, rafts, kayaks, utility boats, and rowing shells — are each used in a different manner. Some are used in flatwater, some in white water, others on the ocean. Bays, lakes, and harbors are perfect for flatwater paddling. California also has dozens of rivers for whitewater paddling.

BOAT SMART

Flatwater Paddling

Utility Boat

Rowing Shells

Canoe

Utility boats are usually used in harbors to travel between a moored boat and the shore. These boats must meet all safety requirements. If you paddle a utility boat at night, you must carry a flashlight and warn other boats of your presence so they can avoid a collision.

Sea kayaks and canoes may also be used on flatwater. You should know that it may be difficult for other boats to see and avoid these vessels.

Remember:

Paddle craft have the right-of-way in all cases, except when crossing a designated shipping channel. But paddle boats are easier to maneuver than other types of boats. If you are in a paddle boat, you should be courteous and make your best effort not to get in the way of power and sailboats.

BOAT SMART

Whitewater Paddling

Whitewater Raft

Whitewater Kayak

Whether you paddle a kayak, canoe, or raft on a river, you must know about river hydrology (the way the water moves) BEFORE you put in. It is important to know about currents, eddies, holes, and other river features in order to paddle safely. It's best to hire a professional guide, or take classes on river running and safety, before you take your own river trip. California has world-class rivers, but you can enjoy them safely only after instruction.

BOAT SMART

River Features

- ✔ A rapid is a section of turbulent water. Rapids usually run through steep terrain, which increases the water's speed. Rapids can vary a lot in length and severity.
- ✔ An eddy is a current that tends to flow upstream, usually found downstream of an obstruction in the main current. An eddy creates a calm spot in the river that paddlers can use to rest, regroup, scout and pull out of the main current.
- ✔ The terms "hole," "reversal," "keeper," and "hydraulic" all describe the same river feature. This is where the river current pours over an obstruction or dam and the water reverses, causing a revolving current that can trap boats and people. You should avoid these "holes."
- ✔ Whitewater rapids are classified by six degrees of difficulty:

  Class I: Easy

  Class II: Novice

  Class III: Intermediate

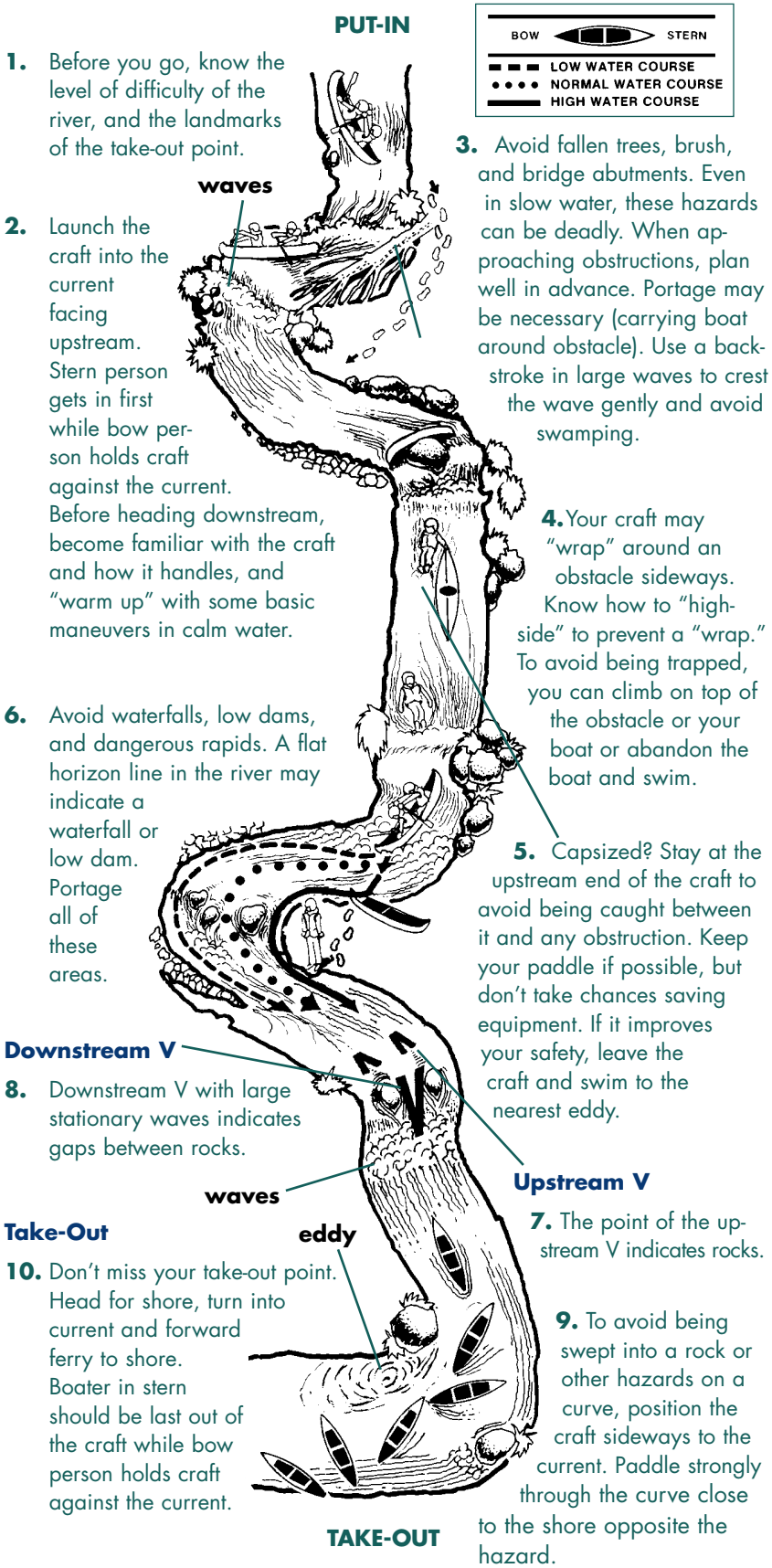
  Class IV: Advanced

  Class V: Expert

  Class VI: Extreme

* ***See appendix C for a detailed description of the whitewater class system.***

Basic River Running Tactics



1. Before you go, know the level of difficulty of the river, and the landmarks of the take-out point.

2. Launch the craft into the current facing upstream. Stern person gets in first while bow person holds craft against the current. Before heading downstream, become familiar with the craft and how it handles, and "warm up" with some basic maneuvers in calm water.

3. Avoid fallen trees, brush, and bridge abutments. Even in slow water, these hazards can be deadly. When approaching obstructions, plan well in advance. Portage may be necessary (carrying boat around obstacle). Use a backstroke in large waves to crest the wave gently and avoid swamping.

4. Your craft may "wrap" around an obstacle sideways. Know how to "high-side" to prevent a "wrap." To avoid being trapped, you can climb on top of the obstacle or your boat or abandon the boat and swim.

5. Capsized? Stay at the upstream end of the craft to avoid being caught between it and any obstruction. Keep your paddle if possible, but don't take chances saving equipment. If it improves your safety, leave the craft and swim to the nearest eddy.

6. Avoid waterfalls, low dams, and dangerous rapids. A flat horizon line in the river may indicate a waterfall or low dam. Portage all of these areas.

7. The point of the upstream V indicates rocks.

8. Downstream V with large stationary waves indicates gaps between rocks.

9. To avoid being swept into a rock or other hazards on a curve, position the craft sideways to the current. Paddle strongly through the curve close to the shore opposite the hazard.

10. Don't miss your take-out point. Head for shore, turn into current and forward ferry to shore. Boater in stern should be last out of the craft while bow person holds craft against the current.

BOAT SMART

These are general safety guidelines for whitewater paddling.

If you are a beginner, always go with a guide or experienced leader who is familiar with the river.

Before You Put-In

YOU CAN CHECK FOR RIVER FLOWS FOR MANY CALIFORNIA RIVERS AT WEB SITE:

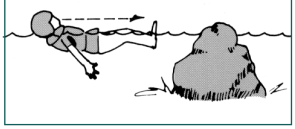
cdec.water.ca.gov.

- ✔ ***Check*** weather and river conditions. Consult the radio, newspaper, Internet or local authorities.
- ✔ ***Check*** that you boat with one or more partners to make your trip safer. For a whitewater run, you should have at least three boats in a party to be safe.
- ✔ ***Check*** the boat or raft to make sure it is made well with strong materials.
- ✔ ***Check*** the river course. Be familiar with the river's features before starting out, or hire a river guide who knows the run, its classification, and its special hazards.
- ✔ ***Check*** to make sure everyone is wearing a properly fitted, U.S. Coast Guard-approved life jacket. Attach a whistle to each PFD.
- ✔ ***Check*** to make sure you know how to "Eskimo roll," or escape for self-rescue, if you're using a kayak or closed-deck canoe.
- ✔ ***Check*** to make sure you have a realistic view of your boating skills. Good river skills take time and practice to learn. Overconfidence or overestimating your ability can quickly get you into trouble.
- ✔ ***Check*** your float plan. Be sure it lists the correct put-in and take-out locations. Give your float plan to a friend or relative, and let him or her know when you have returned.

BOAT SMART

At the Put-In

Swimmer's Position



- ✔ ***Check*** the equipment. Secure all ropes and other gear so they do not get in the way of paddling. Securing ropes and gear is also important so that they will not get tangled in brush or trees, or entangle a swimmer if the boat overturns.
- ✔ ***Check*** to see if you have — and know how to use — safety gear such as throw bags.
- ✔ ***Check*** to see if you have a first aid kit, extra clothing, drinking water, and high-energy snacks.
- ✔ ***Check*** to make sure everyone on the water knows basic verbal and hand signals. These commands include paddle commands, signals for hazards, emergencies, course direction, and for general communication. (See page 86.)
- ✔ ***Check*** that all passengers know what to do if the boat capsizes or "flips." This means knowing swimmer's position, keeping to the upstream side of the boat, keeping track of people and gear, righting the boat and re-entering the boat.
- ✔ ***Check*** to see that you have recommended equipment such as a repair kit, bailing device, river maps, a flashlight, a compass, a knife, and a pump.

Check Out Your Equipment:

EACH CREW MEMBER SHOULD WEAR:

- A Type III or V properly fitted U.S. Coast Guard-approved life jacket.
- A properly fitted helmet.
- Booties, sandals with a heel strap, or shoes that will not come off easily.
- Nylon, synthetic or wool clothing because they do not hold water.
- A wet or dry suit for cold weather or water conditions.
- Sunglasses with a leash, sunscreen, and a signaling whistle. Do not apply sunscreen to your forehead where it can drip into your eyes, or to the back of your legs because it can cause you to slip out of the raft.

BOAT SMART

While Underway

- ✔ ***Check*** any section of the river you're unfamiliar with, or that you can't see from the boat. Go to the shore and scout rapids you are not familiar with. If the rapid is too much of a challenge, carry the boat (portage) around the obstacles.
- ✔ ***Check*** the terrain along the river and river banks. Beware of and avoid strainers such as overhanging trees, log jams, brush piles, and other obstacles in moving currents.
- ✔ ***Check*** to make sure you are aware of the effect of cold water, air temperature and wind on your body temperature. Hypothermia is a constant hazard on the river.

BOAT SMART

Scouting

- ✔ Pull over to the side of the river a safe distance upstream of the rapid or obstruction that you want to scout.
- ✔ Keep your PFD and helmet on to protect yourself if you slip and fall into the river or onto rocks.
- ✔ Carry your throw bag with you. You may need it if a group member falls into the water or you may need it to help other boaters.
- ✔ Look at the rapid and mentally chart the best course. Remember where the eddies or safe parts of the river are in case you take an unexpected path through the rapid. Consider actions you would take if you stray from the best course.
- ✔ Everyone in the group should be comfortable telling the others that they want to portage around a rapid that is beyond their skill level. The rest of the group should respect the individual's decision.
- ✔ At especially difficult rapids, station rescuers downstream with boats and throw lines to prepare for unscheduled swims.

REMEMBER

- Never boat alone. Make sure at least one experienced person is along.
- Drink plenty of water, not alcohol or other diuretics like caffeinated sodas or coffee that can make you urinate.
- Never wear baggy clothes, which tend to get caught on things.
- Never wear cotton, which holds water and makes you cold.
- Never tie yourself or others into the craft.

Returning to Shore

- ✔ ***Check*** Check the surrounding area at put-in and take-out points so that you don't leave any equipment or other items behind. Carry out what you carried in. Leave the wilderness cleaner than you found it.
- ✔ ***Check*** that you are extra careful when entering or exiting the water. Slippery rocks or underwater objects can often cause leg or ankle injuries.

FOR MORE INFORMATION ABOUT PADDLING, CONSULT WEB SITE:

www.dbw.ca.gov/padcraft.htm

REVIEW QUESTIONS: Paddling

Answer these questions by circling **T** for true or **F** for false.

1. Whitewater paddling is a basic skill that requires no previous experience or instruction.....T F
2. You should get out of your boat and scout unfamiliar rapids from the shore.....T F
3. A class V river is a good choice for beginners .....T F
4. Make sure to wear baggy clothes for whitewater paddling.....T F
5. River flows generally remain constant throughout the day.....T F
6. A strainer is a significant hazard on the river.....T F
7. Eddies are dangerous obstacles in a river, and you should avoid them .....T F
8. If you fall into a river, you should get into swimmer's position, floating on your back with your toes up and your feet pointed downstream.....T F

Turn to page 78 for correct answers.

Chapter 4

PERSONAL WATERCRAFT (PWC)

Introduction

Personal watercraft go by many names — water bikes, wet bikes, thrill craft — and they all mean fun. You see them everywhere these days. They're fast, powerful and fairly easy to operate.

But personal watercraft are also involved in many boating accidents and injuries. Operators often go too fast, don't pay attention and don't have much experience. You'll have fun on a personal watercraft when you treat it like a boat - with skill and respect. This chapter will show you how to prevent accidents, be aware of hazards, and use courtesy and common sense.

OBJECTIVES

You will learn:

- The legal requirements for operating a personal watercraft
- Personal watercraft operating guidelines
- Personal watercraft and personal safety
- Navigational rules and aids
- Accident prevention and rescue
- Other important features of operating a personal watercraft

Anatomy of a Personal Watercraft

Personal watercraft, or PWC, are small jet-driven powerboats. The pumps draw water into the housing, through something called the impeller, which compresses the water and forces it through the steerable nozzle, pushing the boat forward. (Personal watercraft are often called "Jet Skis," which is a trademark of Kawasaki Motors Corp., USA.) Personal watercraft come in three main styles: stand-up, sit-down sport class (one or two people), and sit-down for three to four people. The stand-up style carries only one person, who stands while operating the vessel, while the sit-down style has seats for one to four people.

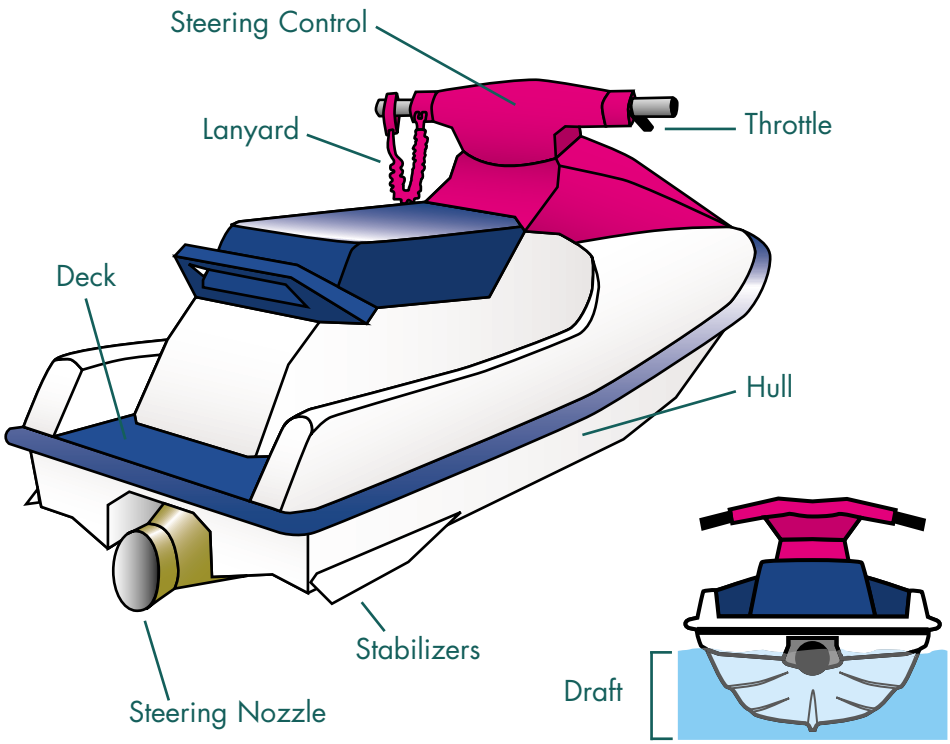
EXAMPLE

Jet pump action is similar to letting go of an untied balloon. Imagine blowing up a balloon and letting it go. The air rushing out propels the balloon. A jet pump operates in the same fashion. Water, rushing through the pump, propels the personal watercraft forward.

The main components of a personal watercraft are the:

- ✔ Hull — the body of the boat
- ✔ Deck — flat surfaces such as the seat, foot wells, and compartment covers
- ✔ Throttle — mounted on the handlebars, regulates how much fuel goes to the engine and controls the speed
- ✔ Other controls — include the on/off switch and the cutoff or "kill" switch with an attached lanyard
- ✔ Steering nozzle — located at the rear of the pump and controlled by the handlebars

PWC Anatomy



Safety Mechanisms

Most personal watercraft are equipped with cut-off switches that must be attached to the operator by a lanyard. If the rider falls off, the cutoff switch engages and shuts off the engine. The personal watercraft engine will stop, and the watercraft will glide to a stop nearby.

Other personal watercraft have an automatic idle and self-circling device. If the rider falls off, this will make the personal watercraft circle slowly in the area until the rider can reboard.

Safety Equipment & Personal Safety

Similar to powerboat operators, personal watercraft operators must have the following safety equipment:

- ✔ A U.S. Coast Guard-approved fire extinguisher, good for gasoline and oil fires
- ✔ Sound signaling device — a whistle attached to your PFD, or a stored signal horn
- ✔ A backfire flame arrestor that is clean and well secured
- ✔ Ventilation of the engine compartment — in order to clear the compartment of fumes, you should ventilate by opening storage spaces and seat for at least four minutes before starting the engine, and after refueling
- ✔ Visual distress signals if your boat is 16 feet or longer (for coastal waters only)

Every person on board a personal watercraft (PWC) and any person towed behind a vessel **must wear** a Coast Guard-approved Type I, II, III, or V life jacket. Exceptions: a person aboard a personal watercraft or being towed behind a vessel, if that person is a performer in a professional exhibition, or preparing to participate in an official regatta, marine parade, tournament or exhibition. Instead of wearing a Type I, II, III, or V Coast Guard-approved personal flotation device, any person engaged in slalom skiing on a marked course, or any person engaged in barefoot, jump, or trick water skiing may choose to wear a wetsuit designed for the activity and labeled by the manufacturer as a water ski wetsuit. A Coast Guard-approved Type I, II, III, or V life jacket must be carried in the tow vessel for each skier choosing to wear a wetsuit.

REMEMBER TO MAINTAIN GOOD AWARENESS AND JUDGMENT

- Beware of natural things that can cause stress, such as wind, sun, noise, and motion.
- Do not drink alcohol and operate a personal watercraft.
- It is against the law for anyone under the age of 21 to drink alcohol.
- If you are convicted of drinking and operating a personal watercraft, you can lose the privilege of getting or keeping your driver's license.

For personal safety, a personal watercraft operator should also wear:

- ✔ A whistle attached to your life jacket, one that works even when wet.
- ✔ Eye protection, to guard you from the sun, spray, and bugs. You should have a leash on your sunglasses so you won't lose them if you enter the water.
- ✔ Boat shoes/booties, to improve traction and protect your feet from underwater hazards.
- ✔ Gloves to improve your grip and make you more comfortable.
- ✔ A wet suit, to protect you against sun, wind, scrapes and bruises, and hypothermia. Manufacturers recommend wearing wet suits to prevent injury.
- ✔ A helmet, to protect your head from injury. The type of helmet varies with the type of water activity. A properly fitted helmet is mandatory for racers.
- ✔ Sunscreen.

See Chapter 1 for more details on Personal Safety and Chapter 2 for details on Boating Law.

Legal Requirements

Age of Operator

To operate a personal watercraft alone, the operator must be 16 years old or older. A person 12-15 years old may operate a personal watercraft designed to carry at least two people, if someone 18 years old or older supervises him on board.

Hull Identification Numbers (HIN)

An HIN is a 12-digit number/letter combination that is stamped into the hull of the vessel. An HIN is required for registration and is useful in identifying a stolen personal watercraft.

Registration

A personal watercraft must be registered with the Department of Motor Vehicles (DMV). The registration numbers must be applied left to right on the forward sides of the bow in block letters at least 3 inches high and of a contrasting color - light letters on a dark background, or dark letters on a light background. The state decal must be placed 3 inches aft of the numbers. Letters are separated from the numbers by hyphens or spaces equal to the width of the numbers (other than the number "1") or equal to the width of the letters (other than the letter "I").

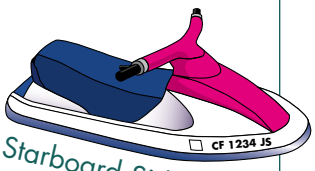
The registration must be carried on the personal watercraft when you're under way. It's best to keep the registration in a waterproof container.

PWC Registration

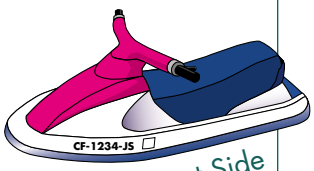
CF 1234 JS

or

CF-1234-JS



Starboard Side



Port Side

REMEMBER

Operating a personal watercraft after dark is against the law. As a general rule, never ride a personal watercraft between sunset and sunrise or at other times when it's hard to see.

This law does not apply to people in professional exhibitions, regattas, races, parades and other similar activities.

See Chapter 2 for more details on Boating Law.

Restrictions Applying to Personal Watercraft

It's important to know that personal watercraft are subject to the same boat operating and navigation rules as other powerboats. Ignoring the rules does not excuse you from the law. To help make personal watercraft a safer form of boating, the law doesn't allow the operator of a personal watercraft to:

- ✔ Use unsafe or reckless practices
- ✔ Jump another vessel's wake within 100 feet of the vessel creating the wake
- ✔ Operate at more than 5 mph within 200 feet of a beach or within 100 feet of swimmers
- ✔ Operate so fast and close to another vessel that they cause the other operator to swerve at the last minute to avoid a collision
- ✔ Operate the personal watercraft toward any person or vessel in the water, and turn sharply at close range in order to spray that vessel or person
- ✔ Alter the self-circling device on a personal watercraft that is equipped with such a device
- ✔ Operate the personal watercraft without a properly attached lanyard that runs from the cutoff or "kill" switch to the operator's body
- ✔ Operate the personal watercraft between the hours from one half-hour after sunset to one half-hour before sunrise

Operating a Personal Watercraft

Before Leaving Home

***Check* that the trailer:**

- ✔ Is licensed with the Department of Motor Vehicles
- ✔ Lights and hitch are working
- ✔ Tires are in good condition and are properly inflated
- ✔ Tie-downs are in good condition and secure
- ✔ Has no loose bolts, cracks, or broken joints
- ✔ Bearings are lubricated and adjusted according to the manufacturer's recommendations
- ✔ Gas cock on the personal watercraft is in the "off" position

BOAT SMART

Pre-Operation Check

Read and understand the owner's manual. Be familiar with the steering controls, and the mechanism that controls the personal watercraft if the rider falls off. Read the warning stickers on the craft.

- ✔ ***Check*** the regulations that apply to powerboating and to personal watercraft. Ignorance is not an excuse.
- ✔ ***Check*** out your skills. Be a competent swimmer.
- ✔ ***Check*** the weather and file a float plan with a friend or family member.
- ✔ ***Check*** the engine, battery fluids, oil and fuel levels.
- ✔ ***Check*** the required safety equipment to make sure:
  - ◆ A U.S. Coast Guard-approved fire extinguisher is charged and secure
  - ◆ The backfire flame arrestor is clean and secure
  - ◆ The cutoff switch works
  - ◆ The start/stop button works
  - ◆ You have a sound signaling device (such as a whistle or horn)
  - ◆ You have a U.S. Coast Guard-approved PFD for every person on board
  - ◆ You have visual distress signals for coastal waters if your boat is 16 feet or longer

***Check* the recommended safety equipment:**

- ✔ You have a basic first aid kit
- ✔ You have an anchor and a tow line
- ✔ You have an extra lanyard
- ✔ You have a phone or VHF radio
- ✔ You have a tool kit for simple repairs

***Check* your personal equipment:**

- ✔ Wear suitable clothing — wet suit, eye protection with a leash, gloves, booties or boat shoes.
- ✔ Make sure life jackets are in good condition.
- ✔ Make sure a whistle is attached to each life jacket.

***Check* the condition of the personal watercraft to make sure the:**

- ✔ Hull is not damaged
- ✔ Engine cover latch is secure
- ✔ Storage compartment cover is secure
- ✔ Engine compartment is vented
- ✔ Gas and oil caps are secure
- ✔ Spark plug cables are secure
- ✔ Throttle grips are not loose
- ✔ Hose connections are tight and not cracked or leaking
- ✔ Bilge is drained
- ✔ Drain plugs are in place and secure
- ✔ Jet pump is not fouled or clogged
- ✔ Throttle springs back after being pressed
- ✔ Steering mechanism moves easily

Casting Off

- ✔ ***Check*** that the lanyard is attached to your left wrist or life jacket.
- ✔ ***Check*** that the fuel cock is in the "on" position.
- ✔ ***Check*** the steering and throttle as you ease the personal watercraft away from the dock.
- ✔ ***Check*** your surroundings. Watch for swimmers and other boats. Leave the dock or beach area slowly.

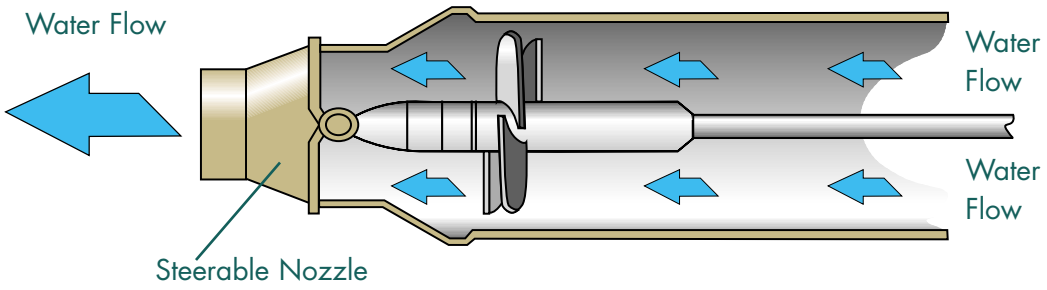
While Under Way

REMEMBER

Keep hands, feet, and hair away from the pump intake and the jet pump nozzle while the personal watercraft motor is running.

- ✔ ***Check*** the water depth. Never operate the personal watercraft in shallow water, because the watercraft may suck materials up from the bottom, damaging the pump. Manufacturers recommend operating in at least 18 to 24 inches of water that is free of debris and weeds.
- ✔ ***Check*** for other boats, swimmers, and water skiers. Be careful when turning — look to both sides and aft.
- ✔ ***Check*** the speed laws, right-of-way, navigation markers, and signs.
- ✔ ***Check*** your noise. Be polite, and limit noise by not boating in one place for too long.
- ✔ ***Check*** the current or water flow. Avoid strong currents, because they can be dangerous to riders trying to reach and climb aboard their watercraft.
- ✔ ***Check*** the waterway. Avoid rocky areas and jetties (barriers built to protect harbors) because of unexpected currents and a possible collision.
- ✔ ***Check*** the fuel — conserve to make sure you can get back to shore. Remember the one-third rule — one-third of a tank out, one-third back in, and one-third for safety.
- ✔ ***Check*** the time. Return before dark or before you are too tired.

PWC Jet Pump Impeller



When you turn the handlebars to the right, the steering nozzle also turns to the right and the water stream pushes the back of the boat to the left, causing the personal watercraft to turn right.

Risk of Collision and Stopping Distance

Personal watercraft don't have a way to stop quickly because they don't have brakes. Depending on how fast you're going, you will keep moving forward for several seconds after you let go of the throttle. It's important to know that it will take time and distance for you to come to a complete stop.

It's especially important to be careful when another boat is coming straight at you. If two boats are traveling straight at each other, the distance between them will close very quickly!

Things to remember:

- ***Do not*** follow or operate too closely to other watercraft.
- ***Do not*** jump the wake of another boat within 100 feet of that boat.
- ***Do not*** operate a personal watercraft while under the influence of alcohol or drugs.
- ***Do not*** pollute the waterways.

CAUTION

You must maintain power to steer a personal watercraft. If you don't maintain power, your personal watercraft will continue in the original direction even if the operator turns the handlebars. ***Without power, the operator will lose steering control of the personal watercraft.*** This is a common cause of personal watercraft accidents. So it's important to be alert and always be ready to steer away from a person, vessel, or object.

To Tow a Water Skier Behind a Personal Watercraft

CAUTION

When operating a personal watercraft:

- Take frequent breaks.
- Avoid tunnel vision - look around for other boats, swimmers, and water skiers, not just straight ahead.
- Drink water or soft drinks, not alcohol.

- ✔ You should not tow a skier with any personal watercraft smaller than a three-person model, which can hold the operator, the observer and a skier.
- ✔ You must have an observer on board who is at least 12 years old.
- ✔ The skier should wear a U.S. Coast Guard-approved PFD.
- ✔ The observer must display a red or orange signal flag (at least 12 inches on each side) to indicate:
  - ◆ a downed skier
  - ◆ a skier in the water preparing to ski
  - ◆ a ski line extended from the personal watercraft
  - ◆ a ski in the water near the personal watercraft
- ✔ You should know the standard hand signals in order to communicate with the skier and those on board.
- ✔ Be aware that your personal watercraft will handle differently when towing a skier.
- ✔ It's against the law to tow a skier between sunset and sunrise.

For more detailed information on water skiing, see Chapter 3.

Returning to Shore

- ✔ ***Check*** your speed. Slow to the lowest possible speed as you approach the landing site.
- ✔ ***Check*** the water depth. Be ready to get off the watercraft and push it ashore or to its mooring site.

Fueling

CAUTION

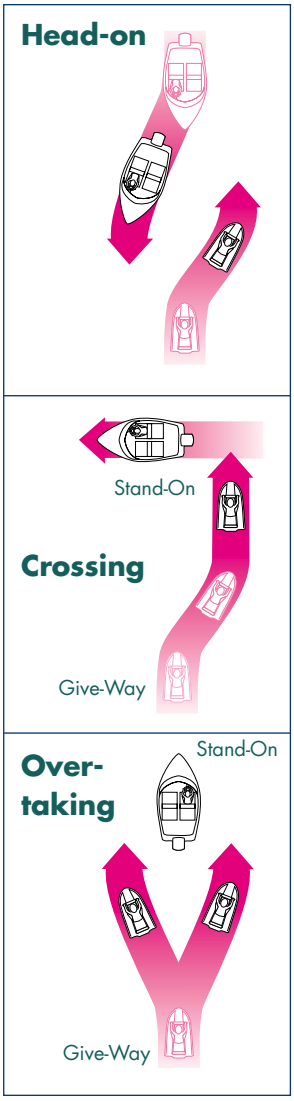
Before you restart your personal watercraft, it's very important to ventilate the engine compartment for at least four minutes, to release any gas fumes that may have settled and may explode.

If you need to add fuel to the personal watercraft on the beach, it's important to take all necessary precautions to prevent spilling fuel. Pull the personal watercraft up on the beach as far as possible so that accidentally spilled fuel will not go directly into the water. Wrap a rag around the opening to the gas pipe and pour the gas in very slowly. When you hear or see that the tank is nearly full, stop pouring the gas. Do not overfill, because gasoline expands as it warms. Never top off when fueling on a beach, because this is the most common way spills occur. Replace the cap tightly when you're done. Air the rag until it is dry or store it in a covered metal container. You should fuel your personal watercraft while it's on the trailer in the parking lot, or at a gas station.

Navigational Rules and Aids

Navigational Rules

Operating a personal watercraft in some ways is a lot like driving a vehicle, because you must follow rules of the road and obey signs. But operating a personal watercraft is also different from driving a car or motorcycle, because when you release the personal watercraft's throttle, you lose steering ability and you have no brakes to help you stop.



Meeting head-on	When two boats meet head-on, each must keep to the right (starboard).
Crossing	When crossing, the boat to the right has the right-of-way, just like a car at an intersection, and is the stand-on vessel. The stand-on vessel continues on a steady course and speed. The give-way vessel should slow and turn to starboard if necessary, and carefully pass the stand-on vessel astern (behind it).
Overtaking another boat	When you overtake another boat from behind (the stern), you are the give-way vessel. The boat being overtaken should hold course and speed. Pass with care on the right or left of the stand-on vessel.
Right-of-way	Other boats, such as commercial fishing boats, deep-draft ships, sailboats, or other non-motorized vessels cannot maneuver as well and have the right-of-way over personal watercraft.

BOAT SMART

Personal Watercraft Rules of the Road

Follow the basic rules of the road except when you need to depart from them to avoid a collision.

- ✔ Avoid ship channels when possible. Cross ship channels quickly when you can't avoid them.
- ✔ Always watch for all boat traffic.
- ✔ Know that five or more short sound blasts mean danger or emergency.
- ✔ Know the charts for the waterways in which you operate your personal watercraft. Know the likely hazards and high traffic areas.
- ✔ Keep a wide distance between your personal watercraft and other boats or persons in the water.

Navigational Aids

Buoys, the primary waterway marking system, have distinctive shapes, numbers, lights, and sounds to guide boaters on a safe course.

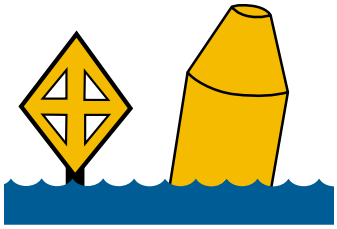
The six most important markers to know are:

Boats keep out

Information

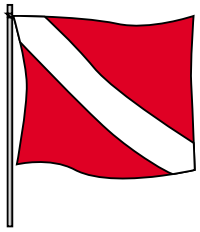
Danger

Obstruction



Controlled Area

Diver Down



Signs also mark waterways. When operating a personal watercraft, the most important signs to recognize are the ones that read "NO WAKE" and "5 MPH." ALL boaters must obey these signs.

See Chapter 2 for more details on Navigational Rules and Aids.

Accident Prevention and Rescue

Prevention

- ✔ Do not make sharp or wild turns.
- ✔ Do not operate your personal watercraft in shallow water, because the intake will pick up debris and clog the pump.
- ✔ Be aware of other boat traffic and your skill level as an operator at all times.
- ✔ ***Check*** the weather and water conditions before going out.
- ✔ Do not carry more passengers than your personal watercraft can safely hold. (Check the capacity plate.)
- ✔ Drink water or soft drinks, not alcohol.
- ✔ Prevent fire and environmental damage by refueling correctly.

Dangerous Moves

Operators of personal watercraft who perform the following dangerous moves are breaking the California boating law and can be cited for reckless or negligent operation.

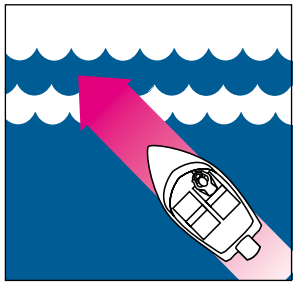
- ✔ Tag and turn — this involves sharp and wild turns close to each other
- ✔ Overtaking another vessel closely at high speeds
- ✔ Wake jumping within 100 feet of another vessel
- ✔ Following other boats too closely — leave a safe distance to allow time to maneuver and avoid a collision
- ✔ Operating your personal watercraft in another boat's wake — the water may be whipped to a froth, which can affect how you steer
- ✔ Chasing another personal watercraft in small circles

Bad Weather

If you're caught in bad weather:

- ✔ Reduce speed
- ✔ Proceed with caution
- ✔ Head for the nearest safe shore landing area

If the water becomes choppy, head into the waves at a slant, or about a 45-degree angle.



45 Degree Angle

REMEMBER

If you are involved in an accident causing more than $500 in damage, or the loss of a vessel, you must report it to the California Department of Boating and Waterways within 10 days.

A formal report of a death or a missing person must be filed with the Department of Boating and Waterways within 48 hours.

Also, if an injury requires more than first aid, you must file a formal report with the Department of Boating and Waterways within 48 hours.

FOR MORE INFORMATION ON HYPOTHERMIA, CONSULT WEB SITE:

www.dbw.ca.gov/resourc.htm and click on "Hypothermia"

Rescue

The moving parts of a personal watercraft are inside the craft, reducing your chances for injury. If a rider falls off a personal watercraft, most of the craft have one of the two following safety devices:

- ✔ A cutoff switch will stop the engine when the operator falls off.
- ✔ Or the engine will continue to idle and the steering mechanism will turn all the way to port or starboard, making the personal watercraft circle slowly nearby if the operator falls off.
- ✔ In either case, the operator should carefully climb aboard the personal watercraft. If the personal watercraft has a lanyard, remember to reconnect it in order to restart the engine.

IF YOUR PERSONAL WATERCRAFT CAPSIZES:

- ✔ Right the craft the way the manufacturer recommends.
- ✔ Board and restart the engine after you have connected the lanyard to the cut-off switch.

IF YOUR PERSONAL WATERCRAFT HAS STALLED AND WILL NOT RESTART:

- ✔ Wait a few minutes before trying to restart. The engine may be "flooded" or the fuel line may be clogged.
- ✔ Do not attempt to repair the engine while you're on the water.
- ✔ If the watercraft will not restart, stay with the personal watercraft until help comes.
- ✔ Wave your arms, or use a whistle, mirror or other signaling device stored on board to attract attention.

IF A FIRE STARTS ABOARD YOUR PERSONAL WATERCRAFT

- ✔ Pull the fire extinguisher pin.
- ✔ Aim the nozzle of the fire extinguisher at the base of the flame.
- ✔ Squeeze the trigger.
- ✔ Use a sweeping motion.

IF YOU CANNOT REACH THE FIRE EXTINGUISHER

- ✔ Swim a safe distance away from the personal watercraft to prevent injury in case of an explosion.
- ✔ Signal others to keep away from the personal watercraft.

REVIEW QUESTIONS: Personal Watercraft

Answer these questions by circling the letter representing the correct answer.

1. Before transporting your personal watercraft to the waterway, you should:

   a. Check to see if the trailer tires are inflated.

   b. Check to see if the tie downs are tight and properly attached.

   c. Check to see that all trailer lights are working properly.

   d. Check the trailer to see that it has no loose bolts, cracks, or broken joints.

   e. All of the above.

2. Which of the following is true?

   a. Personal watercraft cannot be operated between one half-hour after sunset and one half-hour before sunrise.

   b. You cannot operate personal watercraft in deep water channels.

   c. Personal watercraft cannot tow water skiers.

   d. Personal watercraft cannot race.

   e. None of the above.

3. When a personal watercraft operator wishes to cross the path of another vessel approaching from the right, he must:

   a. Wait until the vessel passes, and cross behind it

   b. Speed up to cross in front of it so the other vessel has clear passage

   c. Stop and wait for the other vessel to clear the area before passing

   d. Give way, direct his course to starboard and cross behind the vessel

   e. Either a, c, or d

4. Registration numbers must be displayed using letters that are at least 3 inches high and that contrast the hull color. ..... T F

5. It is against the law to operate a personal watercraft equipped with a lanyard without properly attaching the lanyard. ..... T F

6. If your personal watercraft capsizes, you should right it following the manufacturer's instructions. ..... T F

Turn to page 78 for correct answers.

Answers to Review Questions

CHAPTER 1

Personal Safety, page 7:

1. T 2. F 3. T 4. F 5. F 6. T.

Alcohol and Drugs, page 8:

1. T 2. T 3. F

Life Jackets, page 12:

1. F 2. T 3. F 4. T 5. T

CHAPTER 2

Safety Equipment, page 19:

1. c 2. e 3. e

Alcohol, Boat Registration and Environmental Laws, page 24:

1. b 2. e 3. e 4. b

Navigational Rules, page 28:

1. The vessel that must hold course and speed when nearing another vessel; the vessel with the right-of-way.
2. The vessel not having the right-of-way that is required to take early and obvious action to avoid a collision when nearing another vessel.
3. Five or more short blasts of a signaling device to warn others of possible danger.
4. T 5. F

Navigational Aids, page 33:

1. d 2. e 3. d

Know Your Road Signs, page 34:

1. Boats keep out.
2. Danger, watch for rock.
3. Controlled area, no wake zone.
4. Information, turn right for first aid station
5. Channel markers. Green can buoy marks left side of the channel. Red nun buoy marks right side of the channel.
6. Mooring buoy: you may tie your boat here.
7. Spherical buoy: marks safe water.
8. Red striped channel marker; marks the center of a channel.

CHAPTER 3

Trailering and Launching a Boat, page 41:

1. T 2. F 3. T 4. F 5. T

General Rules for Operating a Boat, page 46:

1. e 2. a 3. d 4. e

Fueling, Dockinig, Anchoring, Knots and Maintenance, page 51:

1. F 2. F 3. T 4. T 5. F 6. T. 7. T 8. F 9. F

Powerboating, page 55:

1. c 2. e 3. e

Water Skiing, page 57:

1. b 2. T

Sailing, page 59:

1. T 2. F 3. F

Paddling, page 64:

1. F 2. T 3. F 4. F 5. F 6. T. 7. F 8. T

CHAPTER 4

Personal Watercraft, page 77:

1. e 2. a 3. e 4. T 5. T 6. T.

Chapter 5

ACCIDENT PREVENTION AND RESCUE

Introduction

Face it — accidents still happen, no matter how prepared you are. This chapter will teach you how to prevent accidents, and what to do when you can't. It includes several "what if" cases taken from real boating accidents, to help you recognize dangers, rescue injured people and prevent accidents.

Knowing how to prevent accidents and rescue others will give you more confidence and make your time on the water more enjoyable.

OBJECTIVES

You will learn:

- Trends and causes of boating accidents
- Basics of accident prevention and rescue
- Prevention and rescue methods for environmental hazards
- Basic rescue for water activities, such as capsizing, person overboard, collision, grounding and water skiing

Trends in Boating Accidents

As in any other sport, an accident can always happen. Among the national trends:

- ✔ Ninety-two percent of boating deaths happen when small boats capsize, passengers fall overboard, or boats collide.
- ✔ As the number of youth operators continues to increase, so have accidents involving young people, and the injuries and deaths resulting from these accidents.
- ✔ Personal watercraft continue to be involved in nearly half of the accidents that cause injuries and property damage. Sixty-five percent of youth operators involved in accidents were under 16 years old, and 93 percent of youth operators involved in accidents were operating personal watercraft.

BOAT SMART

The Causes of Accidents

- ✔ U.S. Coast Guard boating accident numbers show that a high percentage of boating accidents, especially deadly accidents, occur when operators used poor judgment, didn't pay attention, did not have enough experience, and behaved wildly.
- ✔ Many accidents, especially those that cause serious injury or death, happen when boaters drink alcohol.
- ✔ Many accidents happen because boaters don't have the right equipment, or any safety equipment at all. Accidents also happen when operators don't know how to use their equipment, or don't know the limits of their equipment. And they may not maintain their equipment correctly.
- ✔ More than 70 percent of personal watercraft involved in accidents in California were either borrowed or rented.

FOR THE MOST RECENT CALIFORNIA ACCIDENT SUMMARY AND STATISTICS, CONSULT WEB SITE:

www.dbw.ca.gov

and click on "accident report"

Basics of Prevention

- ✔ Know and practice the basic safety guidelines and the law for your type of boating.
- ✔ Always carry the proper safety equipment and know how to use it.
- ✔ Have a properly fitted, U.S. Coast Guard-approved PFD for everyone aboard when boating.
- ✔ Have the proper clothing for your type of boating and for the weather and water conditions.
- ✔ Be water safe by knowing how to swim and tread water.
- ✔ Always boat carefully and with good judgment. Stay within the limits of your boating skills and equipment.
- ✔ Never boat under the influence of alcohol or drugs — it is against the law, and extremely dangerous to you and others.

Basics of Rescue

- ✔ The first rule of any rescue situation is to never put yourself or other rescuers in danger when trying to help someone. You don't want to become a victim and make the situation worse.
- ✔ Stay calm. Be sure to carefully judge the situation and condition of the people involved.
- ✔ Plan how to use your own and others' experience and resources to deal with the situation. Experience is a key resource in any type of emergency situation.
- ✔ Call for help on a phone or VHF radio.
- ✔ If the group size allows, send two or more persons together to get help.
- ✔ If you send someone for help, be sure the person knows the details of the situation, knows where to find a phone or other means of communication, knows who to contact, and returns to the scene of the accident after successfully contacting authorities.
- ✔ Seek basic training in first aid, cardiopulmonary resuscitation (CPR) and life-saving skills.

EACH SECTION BELOW INCLUDES THREE PARTS:

Guidelines for prevention, suggested techniques for rescue, and actual case studies. You should be able to read the case study and point out what the person(s) did right or wrong, what the person(s) could have done differently, and how you would react to the situation. Chapter headings at the beginning of each section point out the location of more detailed information on the topic.

ENVIRONMENTAL HAZARDS (Refer to Chapter 1)

Introduction

Environmental stressors can cause many types of accidents by impairing your judgment and reducing your awareness. Environmental injuries, such as hypothermia, can result from an accident or carelessness.

Prevention

- ✔ Check local weather sources such as the radio, newspaper, or the Internet before getting underway. Constantly monitor the winds and horizon for changes in the weather.
- ✔ Be ready for all types of weather and water conditions, by having the necessary clothing and safety equipment on board.
- ✔ Be sure your skills and vessel are suitable for the conditions.
- ✔ It's a good idea that at least one person on board have a current first aid/CPR certification.
- ✔ Be able to recognize and treat cold- and heat-related illnesses.
- ✔ Always carry extra clothing, food and water.
- ✔ Limit your exposure to stressors.

Rescue

- ❍ Call for outside help if necessary.
- ❍ Be sure there is no danger to yourself and others at the scene.
- ❍ Be sure the victim does not face other dangers.
- ❍ If possible, remove the victim from whatever caused the emergency.
- ❍ Treat the victim using your first-aid knowledge and available resources.

SCENARIO

Case Study: The operator of a small fishing vessel and a passenger were fishing on the ocean. The water was calm in the morning when they left the dock, but the operator was unaware of an incoming storm. In the afternoon, the seas became dangerous, swamping the vessel and causing it to sink. The victims were in the water for 30 minutes and had body temperatures of 82 degrees when they were rescued. The victims were wearing life jackets but not special clothing for cold water.

Questions

1. Identify the mistakes that the people made and the proper actions.
2. What could these people have done differently to prevent this accident?
3. What steps could you take to rescue the victims and make the situation better?

Basic Rescue Tips for Water Activities (Refer to Chapter 1)

Introduction

Water rescue is similar to any rescue situation. You must be trained, careful, and responsible when attempting to help others.

Always be ready to help others, but do not take needless risks. To help in emergencies from a boat:

- ✔ Approach an accident scene cautiously. Watch for victims in the water. Check the area for possible risks to yourself and other rescuers. Turn the engine off before picking up victims — if there is no current or wind that would make you maneuver the boat.
- ✔ Communicate with people in the water. They can tell you if they're all right, if other passengers are with them, and help you to choose your first rescue steps.
- ✔ Whenever possible, use equipment such as line, life preservers or floatable objects to save lives.
- ✔ Toss life-saving devices to those who do not have them.
- ✔ Do not jump into the water to help a victim unless it is your only choice and you face no risk to yourself.
- ✔ Give help first to anyone who seems to be seriously injured or is having trouble staying afloat.
- ✔ If necessary — and if your boat can safely hold additional people — help victims by pulling them aboard. In heavy seas, it is safest to rescue the victim over the side of the vessel near the stern.

Something you should know:

To help in emergencies from the shore:

- ***Reach:*** First try to reach the person. Use your hand, or anything else you can hold onto, such as a stick, rope, towel, oar, or a fishing pole, to reach the person. Make sure that you have a firm grip on a solid object or another person on shore before reaching. Keep a low center of gravity by keeping low to the ground and get ready for the weight of the person you're rescuing before you reach. You don't want to be pulled into the water.
- ***Throw:*** If you cannot reach the victim, throw something that will float, such as a ring life preserver with a line attached so you can pull the person to safety. If a ring life preserver is not available, throw any object that will help the victim float until help arrives.
- ***Row:*** If the person is too far away and you know how to swim, you can row out to them on something that will keep both of you afloat. For example, you may use a small boat, raft, large inner tube, or surfboard. Remember to put on a life jacket before rowing to the victim, and carry an extra PFD in case the victim needs one. Help the victim climb aboard or have him hold onto the float while you paddle back to safety.
- ***Go:*** If you can't reach, throw, or row, go for help or call 9-1-1. Give the location information to lead rescuers to the emergency site.

CAUTION

You should not enter the water to rescue someone unless you have been trained in lifesaving skills.

SCENARIO

Case Study: A family was having a picnic in late Spring on a beach next to a river. Their ten-year old daughter was swimming in an eddy just upstream from the beach. She suddenly found herself in the fast downstream current. The father grabbed a loose branch from the beach and extended it toward his daughter. When his daughter grabbed the branch the added weight pulled the father into the swift current. They were both quickly swept downstream and out of view. The mother quickly alerted the park ranger. The park staff was trained in swiftwater rescue and was able to pull the father and daughter to shore. Both sustained some bruises but were otherwise OK.

Questions:

1. Identify the mistakes that the people made, and also their proper actions.
2. What could these people have done differently to prevent this accident?
3. What steps could you take to rescue the victims and make the situation better?

CAPSIZING OR SINKING (Refer to Chapters 1, 2, 4)

POWERBOATS, INCLUDING PERSONAL WATERCRAFT

Introduction

Capsizing or sinking can result from severe weather, water conditions, an overloaded boat, poor judgment in operating a vessel, or faulty equipment.

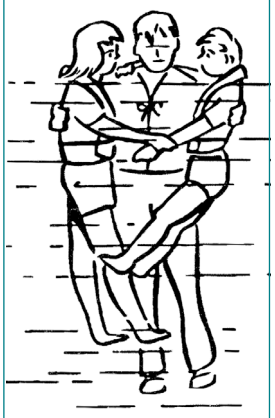
Prevention

- ✔ Constantly check the weather and water for conditions that may cause hazards.
- ✔ Do not carry more people or weight on your vessel than the capacity plate says you can.
- ✔ Distribute the weight of passengers and gear evenly.
- ✔ Check the automatic bilge pump in your boat (if it has one) to see that it is working properly.
- ✔ Check the drain plug.
- ✔ If your vessel leaks, bail out the boat continuously and head for a safe shore as soon as possible.
- ✔ Do not stand up or change seats in small boats. If you have to change position, tell the operator, hold onto the gunwales, and have other passengers move to counterbalance the shift in weight.
- ✔ Engine failure places motorboats at greater risk of capsizing. Maintain the engine and battery. Carry spare parts, and learn to do simple repairs.

Rescue

- ❍ Do not attempt to swim ashore unless it's safe to do so. Be aware that distances are hard to judge accurately on the water. The shore may be farther away than you think. Stay with the boat until help arrives. A boat is far more visible than a person in the water.
- ❍ Hold onto the nearest floating object.
- ❍ Count the number of people to make sure that no one is missing.
- ❍ Check and treat serious and life-threatening injuries.
- ❍ If possible, right the boat and bail out the water.
- ❍ If you can't right the boat, climb onto the hull and signal for help. Use signaling devices to tell rescuers you are in danger. You can also wave your arms and yell.
- ❍ Avoid hypothermia by preventing heat loss. Keep your head out of the water, climb up on the boat's hull as far out of the water as possible. If you cannot get out of the water, curl into a ball or huddle with other passengers and limit your movement (HELP — Heat Escape Lessening Position).
- ❍ Blow a whistle, yell or wave your arms to get attention.

HELP Positions



OR SEE WEB SITE:
www.dbw.ca.gov/resourc.htm
and click on "safe survival"

Introduction

Many of the prevention and rescue techniques discussed here also apply to sailing. But you should know a few techniques specific to sailing.

Prevention

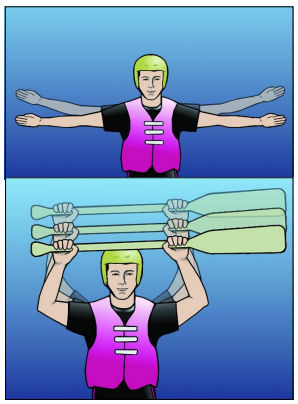
- ✔ If the sailboat is going to capsize, let the sail all the way out, push the tiller away from you or steer into the wind, and get to the high side of the boat.
- ✔ Be sure to check weather and wind conditions constantly. You may need to adjust your course and sails to adapt to changing conditions.
- ✔ Know how to sail and use your equipment in strong winds and stormy weather.

Rescue

- ❍ If the boat capsizes, search the area to make sure everyone is accounted for. Look for injuries and be sure that no one is having difficulty staying afloat.
- ❍ If the boat is small enough, release sails, stand on the centerboard and, holding on to the gunwale, use your weight to right the boat (this procedure should be practiced in a calm, supervised setting, such as a boating class).
- ❍ Once righted, immediately free the lines so the sails do not "catch" wind and cause the boat to capsize again.
- ❍ Help other passengers climb aboard if necessary.
- ❍ Begin bailing out the boat after it has been righted and secured.
- ❍ If you cannot right the boat, climb onto the hull to get as far out of the water as possible.

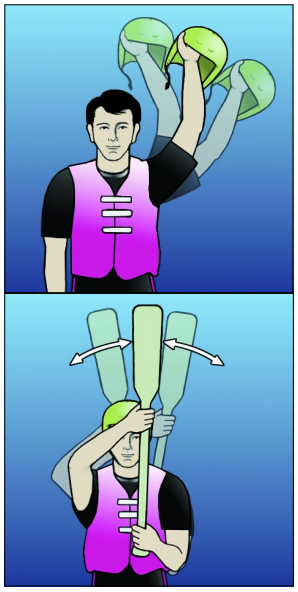
River Signals:

Stop & Pull Over



Are You OK? Yes, I'm OK

Help or First Aid Needed



Pointing Positive "A Safe Place to Go"

PADDLING ON WHITEWATER

Introduction

Paddling on whitewater requires skill and experience. The added danger of moving water makes capsizing very dangerous.

Prevention

- ✔ The crew should check the water flow and weather conditions before starting out.
- ✔ Be sure to have the proper clothing for the weather and water conditions.
- ✔ Carry a throw bag and other safety equipment and know how to use them.
- ✔ Do not carry too many passengers on the raft or boat.
- ✔ The crew should be familiar with the basic rules of river safety.
- ✔ Do not paddle on rivers that are too swift or dangerous for your abilities.
- ✔ Know and practice the procedures for prevention of a "wrap." This technique is known as a "highside."
- ✔ Know hand signals.
- ✔ Know and practice the swimmer's position, and swimming to an eddy.

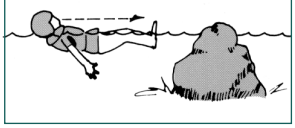
Self-Rescue

- ✔ If your boat capsizes or you fall overboard, stay on the upstream end of the craft. This prevents your chance of being pinned against obstacles in the water.
- ✔ Hold on to your boat unless it threatens your safety.
- ✔ Float on your back, feet-first downstream, to the nearest eddy or calm area. Keep your toes up out of the water. This position allows you to push away from obstacles and prevents your feet from getting caught in anything underwater.
- ✔ You may need to turn onto your stomach and swim hard to an eddy or the shore to avoid upcoming rapids, or if help is not nearby.
- ✔ Do not attempt to stand in swift water. If your foot gets wedged in the rocks, the force of the water can push you over and hold you under.
- ✔ You should avoid strainers if you can. If you are swept into a strainer, then you should swim hard toward it and vigorously climb your way to the top as you hit it.

Assisted Rescue

- ✔ If someone falls overboard, crew members will "point positive" to a safe place.
- ✔ The swimmer in the water should listen for instructions from the guide.
- ✔ A paddle or oar can be extended to the person overboard if he or she is close.
- ✔ You must use a throw bag if the current is swift, or the victim is too far away. To use a throw bag:
  - ◆ Clearly yell the person's name to attract his or her attention.
  - ◆ Throw the bag so it hits the swimmer or lands slightly upstream.
  - ◆ The swimmer should grab the rope and bring it over his shoulder. This keeps the person in swimmer's position with his or her face out of the water.
  - ◆ The swimmer should not grab the bag because the remaining rope will continue to be pulled out and he will be carried farther downstream.
  - ◆ Rope should never be wrapped around an arm or wrist. This could cause serious injury.
  - ◆ The rope thrower should be prepared for a jolt when the rope tightens.
  - ◆ Pull the swimmer toward shore or the boat.
  - ◆ When pulled back to the boat, you can lift the swimmer aboard by grabbing the shoulder straps of his or her PFD. Do not pull the victim by his or her arm or wrist.
- ✔ Paddlers should never put themselves in danger to rescue another.
- ✔ Helping swimmers is the first priority. Saving equipment should wait until after all swimmers have been helped.

Swimmer's Position



Seek help from passing boaters if an accident happens. Most commercial rafts have guides who know how to handle emergencies. On remote sections of a river, stay on the riverbank. Chances are, help will come to you faster than you can find it.

If you must leave an accident site to seek help, follow the riverbank to the closest available help. Do not try to go overland unless you're familiar with the area.

PADDLING ON FLATWATER OR THE OCEAN

Introduction

Weather and water conditions can change very quickly and with little warning. Be ready for the unexpected.

Prevention

- ✔ Do not overload the vessel.
- ✔ Check and monitor weather and ocean conditions.
- ✔ Do not go out when conditions are worse than your skills or your equipment can handle.
- ✔ Carry the proper safety equipment and wear the right clothing for the water temperature.
- ✔ Get training in the techniques used to right a sea kayak or other paddle craft. Practice these techniques in a calm and supervised setting, such as a boating class.
- ✔ If you are paddling in open water you should know and practice open water rescues. These can be rescues for one or more boats.

Rescue

- ❍ Try to right the boat if possible.
- ❍ Once the boat is righted, climb back in and begin bailing out the water.
- ❍ Count the number of people to make sure that no one is missing.
- ❍ Check the group for signs of hypothermia and take necessary actions.
- ❍ If you're unable to right the boat, climb on top of the boat and signal for help.

SCENARIO

Case Study: The operator had overloaded his small row boat and was allowing his passengers to ride in an unsafe position on the gunwales and transom. As a prank, all the passengers moved to the stern of the vessel at once, swamping and sinking the vessel. During the crazy scene that followed, two of the passengers drowned. The operator and many of the passengers were under the influence of alcohol.

Questions:

1. Identify the mistakes that the people made and the proper actions they could have taken.
2. What could these people have done differently to prevent this accident?
3. What steps could you take to rescue the victims and make the situation better?

PASSENGER OVERBOARD (Refer to Chapters 3 and 4)

Introduction

People can fall overboard or leave their boat for a variety of reasons, but most often because of heavy seas, not holding onto something solid when moving on deck, or sitting on the gunwale or other dangerous location.

Prevention

- ✔ The operator should not overload the boat.
- ✔ In a small boat, passengers should be careful and limit movement while the boat is operating. If you must move, be sure to inform the captain of the boat so he or she can get ready for the weight shift.
- ✔ Passengers should not ride on the gunwales or the bow.
- ✔ You may not be used to being on a moving platform, such as a boat on the water. You should take time to get used to balancing and moving safely on a boat that is in motion.

Rescue

- ❍ Even if the person overboard knows how to swim, toss the victim a PFD, floating cushion, or other floatable object with a line attached.
- ❍ If the boat is underway, the operator should immediately slow the boat. You should be careful maneuvering when someone is in the water. Avoid hitting a person with the boat or propeller.
- ❍ Whoever spots the person overboard should never take his eyes off of that person, unless another crew member is assigned to watch the victim. Point toward the victim to help guide the operator.
- ❍ At night, direct the best possible light on the victim.
- ❍ Warn approaching boats.
- ❍ Approach the victim from downwind or into the current.
- ❍ Judge the situation to see if you need to get help from somewhere else.
- ❍ When trying to rescue the victim, put the engine into neutral and keep the victim away from the stern of the boat. If there is no wind or current that would require you to maneuver the boat, you can turn the engine off as you pick up the victim. These steps will prevent serious injury from the boat's propeller.
- ❍ If the victim has (or might have) a spinal injury, a person trained in lifesaving procedures may need to enter the water to help the victim. Keep the injured person in the water until a trained rescuer arrives.

SCENARIO

Case Study: A passenger on a sailboat was sitting on the gunwale of the boat when a sudden shift of the boat caused him to fall overboard. The operator of the boat panicked and took a wide turn while trying to come about and lost sight of the victim. The victim came into view momentarily but the boat passed by quickly as it was picking up speed from the wind. The victim was not wearing a PFD and drowned.

Questions:

1. Identify the mistakes that the people made and the proper actions they could have taken.
2. What could these people have done differently to prevent this accident?
3. What steps could you take to rescue the victims and make the situation better?

COLLISIONS (Refer to Chapters 2, 3 and 4)

When a collision is about to happen, take steps to avoid it.

The stand-on vessel must maintain course and speed. The give-way vessel must change its course and/or speed to avoid a collision. If the give-way vessel does not take proper action, the stand-on vessel must take action to avoid a collision. ***All boaters have the responsibility to avoid collision.***

Introduction

Collisions can be two or more vessels crashing into one another, or a vessel colliding with another object, such as a dock, pier or shore. You can prevent most collisions easily.

Prevention

- ✔ Keep a sharp lookout on all sides for boats and other obstructions, such as piers, docks, buoys, shorelines and floating debris. Beware of tunnel vision — don't just look straight ahead.
- ✔ Follow the rules of the road.
- ✔ Be aware of things that can act as stressors, such as overexposure to sun, wind, motion, noise, and vibration.
- ✔ Don't drink alcohol and operate a boat because it can impair your judgment and depth perception. The effects of natural stressors are made worse when you use drugs or alcohol.
- ✔ Slow down when approaching a landing, such as a shore or dock. Be extra careful.
- ✔ Maintain a safe distance between your boat and other boats. Be aware that two boats approaching each other head-on can close the distance between them very quickly.

Rescue

- If a collision happens, people may have fallen overboard or your vessel may be capsized or severely disabled. Take needed actions that are outlined under CAPSIZING and PERSON OVERBOARD.
- If you're not involved in the collision, or if your vessel is not seriously damaged, you should stand by to offer help.
- If you need further help, use a radio or signaling device to call for help.
- Be sure to warn other boats when people, debris or flammable liquids are in the water.

SCENARIO

Case Study: An inexperienced personal watercraft operator (on her second trip) was riding alongside a friend on another personal watercraft. The friend was slightly ahead of her when he suddenly slowed down. She let off the throttle, trying to slow down, but instead lost control of her craft. She slid sideways into her friend. He sustained a fractured spinal cord, and was paralyzed from the waist down. He also had serious head and chest injuries. She was thrown into the water. The fall made her unconscious, but her life jacket kept her afloat.

Questions:

1. Identify the mistakes that the people made and the proper actions they could have taken.
2. What could these people have done differently to prevent this accident?
3. What steps could you take to rescue the victims and make the situation better?

GROUNDING (Refer to Chapters 2, 3 and 4)

Introduction

Grounding at high speed can seriously damage a boat and throw passengers overboard or into solid objects on board. You can prevent grounding easily by learning about the area beforehand, and by using caution in shallow areas.

TAKE NOTE

If there is an emergency and you are out to sea or in an isolated area and have a radio, hail the Coast Guard over VHF Channel 16 using the standard "Mayday" call.

Prevention

- ✔ Always be alert to your surroundings.
- ✔ Learn to "read" the water surface. Ripples, boils, and coloration can indicate shallow water, reefs or shoals.
- ✔ Know the expected tide levels and times. Consult a tide book. You may have good water depth in an area during a high tide, but the area may be dangerous at low tide.
- ✔ Know the area where you will be boating. Check charts for possible shallow areas or other underwater hazards before boating.
- ✔ Use caution rather than convenience. Don't just guess about the depth of the water.

FOR MORE INFORMATION ON DISTRESS CALLS, CONSULT WEB SITE:

www.dbw.ca.gov/pubs/abc/

and look for "Radio Procedures–Marine and Emergency Distress"

Rescue

- ❍ First, check the damage to your boat's hull. Make sure you are not sinking or taking on water.
- ❍ Identify the cause of the grounding (sand, rock, sharp objects, a wreck, etc.).
- ❍ If it won't damage the hull, reverse engines and attempt to back off.
- ❍ Waiting for a higher tide may be the solution if you ran aground because of a low tide.
- ❍ If there are obstacles that may increase damage to the hull, or if you have serious hull damage, call the local law enforcement agency or U.S. Coast Guard for help.

SCENARIO

FOR MORE INFORMATION ON GROUNDING, CONSULT WEB SITE:

www.dbw.ca.gov/resourc.htm

and click on "Grounding"

Case Study: The operator of a vessel was traveling in the early morning darkness in ocean waters. He thought he was familiar with the area, so he was not using any navigation aids. He lost his bearings and struck rocks just offshore. Then, his engine stalled. He tried to drop anchor, but it was too late and he was washed against the jetty, which destroyed his vessel.

Questions:

1. Identify the mistakes that the operator made and the proper actions that could have been taken.
2. What could this person have done differently to prevent this accident?
3. What steps could you take to rescue the victims and make the situation better?

Rescuing Water Skiers:

Introduction:

Water skiing accidents are very dangerous because of high speeds, crowded ski areas and loose equipment such as the tow rope or skis.

Prevention

- ✔ The operator should be aware of the surroundings at all times. The operator should take great care to avoid other boats, skiers and objects in the water such as skis, tow ropes, buoys, swimmers and other skiers.
- ✔ The observer should observe the skier at all times, know the hand signals that the skier may use, and communicate with the operator. The observer should also have the signal flag ready for any time that a skier or his equipment is in the water.
- ✔ When a skier, ski or tow rope is in the water, the boat operator and passengers should take great care. You should always keep a sharp lookout for other boats.
- ✔ The skier should be looking for floating objects, other skiers and boats. The skier should pay special attention to the tow rope to keep from getting tangled.

Rescue

- ❍ The downed skier should hold up a ski or arm to warn other boats and skiers.
- ❍ The observer should raise the signal flag designating a downed skier, watch the position of the skier and alert other boats.
- ❍ Approach the site from downwind or into the current using slow to idle speed.
- ❍ The boat should return to the water skier as quickly as possible, making sure that the skier's tow rope is not caught in the boat's propeller.
- ❍ An operator should ***keep a skier on the operator's side*** so that the skier always remains within the operator's view.
- ❍ If the skier is re-entering the boat, the operator should ***turn the engine off*** before the skier comes on board. You may be able to leave the engine on if your boat design has the propeller a good distance away from the skier. For instance, many boats specially designed for water skiing have a swim step on the stern and a propeller that is mounted amidships. In either case, the water skier should be brought into the boat over the stern.

REMEMBER

If the boat is put into neutral while the engine is running, the propeller may continue to spin for a short time and cause serious injury. You should make sure that the propeller is no longer spinning before allowing a skier near it.

SCENARIO

Case Study: A person had just finished skiing and was sitting on the swim step of a vessel, pulling in the ski line. The ski flag was raised, as there was still a ski line in the water. A second vessel came very close to this vessel at a high rate of speed and ran over the ski rope, which became caught in the propeller. The line then broke, and snapped back, striking the person on the swim step in the stomach and leg. She sustained third degree burns and a fractured pelvis.

Questions:

1. Identify the mistakes that the people made and the proper actions they could have taken.
2. What could this person have done differently to prevent this accident?
3. What steps could you take to rescue the victims and make the situation better?

Accident Assistance

A vessel operator involved in an accident is responsible for helping other people in the accident, as long as it does not endanger his or her vessel, crew, and passengers. Any person offering help in "good faith," without objection by anyone being helped, can't be held liable for the results of that help.

Accident Reporting

If you are in a boating accident, you must report it to the Department of Boating and Waterways or the local marine law enforcement authority. This may be the local harbor patrol, county sheriff or the U.S. Coast Guard.

If a person dies, disappears, or needs medical attention beyond first aid, the incident must be reported to the enforcement agency responsible for the waterway. Report the following information:

- ✔ Date, time, and exact location of the accident
- ✔ Name of each person who disappeared, died or was injured, and the vessels involved
- ✔ Names and addresses of the owner, operator, and passengers of all boats involved

A formal report must be filed with the Department of Boating and Waterways:

- ✔ Within 48 hours if there is someone has disappeared or died, or if a person has injuries that require more than first aid
- ✔ Within 10 days if the accident involves more than $500 damage, or the boat is a complete loss

A vessel operator involved in an accident that causes damage to a moored boat or other property must notify the owner or person in charge of the property. If the operator can't locate the owner or person in charge of the property, the operator involved in the accident must leave a written notice in an easy-to-see place on the property damaged. This notice must give the name and address of the operator and of the owner of the vessel involved, and a statement describing what happened.

Appendices

Appendix A (Float Plan)

Check List and Float Plan

CHECK LIST

Before embarking on a cruise:

1. File a float plan (see below)
2. Give consideration to basic safety items, including the following:

- ☐ Vessel in good condition
- ☐ Vessel properly loaded
- ☐ Ample supply of fuel
- ☐ Check weather reports
- ☐ Compass and charts
- ☐ Good anchoring equipment
- ☐ Bailing Device
- ☐ Spare parts
- ☐ First-aid kit
- ☐ Flashlight
- ☐ Tools
- ☐ Extra starting battery
- ☐ Personal flotation devices ***(Coast Guard-approved)***
- ☐ Fire extinguishers ***(Coast Guard-approved)***
- ☐ Visual distress signals ***(Coast Guard-approved)***
- ☐ Oars or paddles
- ☐ Marine VHF radio

3. Cancel your "Float Plan" when you return

FLOAT PLAN

Operator _____
Name and address of operator — Phone number

Search for an overdue boat has a much greater chance of being successful if the Coast Guard or other rescue agencies have certain facts. For your own safety and before leaving on a cruise, complete this form and leave it with a reliable person who will notify authorities if necessary.

If Overdue, Contact _____
Name and phone number or rescue agency near point of departure

Vessel _____
Name — CF Number — Length

_____
Power, Inboard - Outboard — Rig, If Sail — Hull Color

_____
Type/Style — Range — Speed

Persons _____ **Radio** _____
Number Persons Aboard — Frequencies

Departure From _____
Place — Date/Time Depart

_____
Car Parked License # — Trailer Parked License # — Where parked

Destination _____
Place — Stops Enroute — Date/Time Return

IMPORTANT: DON'T FORGET TO CANCEL FLOAT PLAN WHEN YOU RETURN

THIS FORM IS AVAILABLE ON THE INTERNET:

www.dbw.ca.gov/publications.htm

and click on "ABC's of the California Boating Law," then scroll down to "Loading"

Appendix B (CA Boating Accident Report)

BOATING ACCIDENT REPORT

CALIFORNIA DEPARTMENT OF BOATING AND WATERWAYS

INFORMATION: OPERATOR #1

OPERATOR NAME AND ADDRESS

AGE

IS OWNER DIFFERENT THAN OPERATOR? ☐ YES ☐ NO

OWNER NAME AND ADDRESS

OPERATOR EXPERIENCE
- ☐ UNDER 10 HOURS
- ☐ 10 TO 100 HOURS
- ☐ OVER 100 HOURS

OPERATOR EDUCATION
- ☐ AMERICAN RED CROSS
- ☐ USCG AUXILIARY
- ☐ US POWER SQUADRON
- ☐ STATE COURSE
- ☐ INFORMAL
- ☐ NONE

INFORMATION: VESSEL #1

THIS VESSEL ONLY	# INJURED	# DEAD	ESTIMATED DAMAGE	RENTED BOAT ☐ YES ☐ NO	# OF PERSONS ON BOARD	# OF PERSONS TOWED

BOAT NUMBER (CF OR DOC #)	MFR. HULL ID #	BOAT NAME	LENGTH

BOAT MANUFACTURER	BOAT MODEL	YEAR BUILT	TYPE OF FUEL	# OF ENGINES	HORSEPOWER

ACTIVITY	FIRE EXTINGUISHER ON BOARD	FIRE EXTINGUISHER USED	LIFE JACKETS ON BOARD	LIFE JACKETS ACCESSIBLE	LIFE JACKETS WORN
☐ RECREATIONAL ☐ COMMERCIAL ☐ OTHER _____	☐ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO

TYPE OF BOAT
- ☐ OPEN MOTORBOAT
- ☐ CABIN MOTORBOAT
- ☐ PERSONAL WATERCRAFT
- ☐ HOUSEBOAT
- ☐ SAILBOAT (aux. engine)
- ☐ SAILBOAT (sail only)
- ☐ CANOE / KAYAK
- ☐ RAFT
- ☐ ROWBOAT
- ☐ OTHER (specify) _____

HULL MATERIAL
- ☐ WOOD
- ☐ ALUMINUM
- ☐ FIBERGLASS
- ☐ PLASTIC
- ☐ RUBBER / VINYL
- ☐ OTHER (specify) _____

PROPULSION
- ☐ OUTBOARD
- ☐ INBOARD
- ☐ INBOARD / OUTBOARD
- ☐ JET
- ☐ SAIL ONLY
- ☐ PADDLE / OARS
- ☐ OTHER (specify) _____

OPERATION AT TIME OF ACCIDENT
- ☐ CRUISING
- ☐ CHANGING DIRECTION
- ☐ CHANGING SPEED
- ☐ TOWING SKIER / TUBER
- ☐ TOWING SKIER- SKIER DOWN
- ☐ TOWING ANOTHER VESSEL
- ☐ BEING TOWED BY ANOTHER VESSEL
- ☐ DRIFTING
- ☐ AT ANCHOR
- ☐ TIED TO DOCK
- ☐ LAUNCHING
- ☐ DOCKING / LEAVING DOCK
- ☐ SAILING
- ☐ OTHER (specify) _____

SPEED _____MPH

INFORMATION: OPERATOR #2

OPERATOR NAME AND ADDRESS

AGE

IS OWNER DIFFERENT THAN OPERATOR? ☐ YES ☐ NO

OWNER NAME AND ADDRESS

OPERATOR EXPERIENCE
- ☐ UNDER 10 HOURS
- ☐ 10 TO 100 HOURS
- ☐ OVER 100 HOURS

OPERATOR EDUCATION
- ☐ AMERICAN RED CROSS
- ☐ USCG AUXILIARY
- ☐ US POWER SQUADRON
- ☐ STATE COURSE
- ☐ INFORMAL
- ☐ NONE

INFORMATION: VESSEL #2

THIS VESSEL ONLY	# INJURED	# DEAD	ESTIMATED DAMAGE $$	RENTED BOAT ☐ YES ☐ NO	# OF PERSONS ON BOARD	# OF PERSONS TOWED

BOAT NUMBER (CF OR DOC #)	MFR. HULL ID#	BOAT NAME	LENGTH

BOAT MANUFACTURER	BOAT MODEL	YEAR BUILT	TYPE OF FUEL	# OF ENGINES	HORSEPOWER

ACTIVITY	FIRE EXTINGUISHER ON BOARD	FIRE EXTINGUISHER USED	LIFE JACKETS ON BOARD	LIFE JACKETS ACCESSIBLE	LIFE JACKETS WORN
☐ RECREATIONAL ☐ COMMERCIAL ☐ OTHER _____	☐ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO

TYPE OF BOAT
- ☐ OPEN MOTORBOAT
- ☐ CABIN MOTORBOAT
- ☐ PERSONAL WATERCRAFT
- ☐ HOUSEBOAT
- ☐ SAILBOAT (aux. engine)
- ☐ SAILBOAT (sail only)
- ☐ CANOE / KAYAK
- ☐ RAFT
- ☐ ROWBOAT
- ☐ OTHER (specify) _____

HULL MATERIAL
- ☐ WOOD
- ☐ ALUMINUM
- ☐ FIBERGLASS
- ☐ PLASTIC
- ☐ RUBBER / VINYL
- ☐ OTHER (specify) _____

PROPULSION
- ☐ OUTBOARD
- ☐ INBOARD
- ☐ INBOARD / OUTBOARD
- ☐ JET
- ☐ SAIL ONLY
- ☐ PADDLE / OARS
- ☐ OTHER (specify) _____

OPERATION AT TIME OF ACCIDENT
- ☐ CRUISING
- ☐ CHANGING DIRECTION
- ☐ CHANGING SPEED
- ☐ TOWING SKIER / TUBER
- ☐ TOWING SKIER- SKIER DOWN
- ☐ TOWING ANOTHER VESSEL
- ☐ BEING TOWED BY ANOTHER VESSEL
- ☐ DRIFTING
- ☐ AT ANCHOR
- ☐ TIED TO DOCK
- ☐ LAUNCHING
- ☐ DOCKING / LEAVING DOCK
- ☐ SAILING
- ☐ OTHER (specify) _____

SPEED _____MPH

NAME OF PERSON COMPLETING THE REPORT _____

SIGNATURE OF PERSON COMPLETING THE REPORT _____

QUALIFICATION OF PERSON COMPLETING REPORT
☐ OPERATOR ☐ OWNER ☐ OTHER (specify) _____

DBW FORM BAR-1 (1/00)

THIS CONFIDENTIAL REPORT IS USED IN RESEARCH FOR THE PREVENTION OF ACCIDENTS AND A COPY IS FORWARDED TO THE UNITED STATES COAST GUARD

BOATING ACCIDENT REPORT

CALIFORNIA DEPARTMENT OF BOATING AND WATERWAYS

The operator of every recreational vessel is required by Section 656 of the Harbors and Navigation Code to file a written report whenever a boating accident occurs which results in death, disappearance, injury that requires medical attention beyond first aid, total property damage in excess of $500, or complete loss of a vessel. Reports must be submitted within 48 hours in case of death occurring within 24 hours of an accident, disappearance, or injury beyond first aid. All other reports must be submitted within 10 days of the accident. Reports are to be submitted to the California Department of Boating and Waterways at 2000 Evergreen Street, Suite 100, Sacramento, California 95815-3888, (916) 263-8189. Failure to submit this report as required is a misdemeanor and is punishable by a fine not to exceed $1000 or imprisonment not to exceed 6 months or both.

DATE OF ACCIDENT (M/D/Y)	TIME OF ACCIDENT	COUNTY	BODY OF WATER	LOCATION ON WATER
| |	☐ AM ☐ PM			

# INJURED	# DEAD	TOTAL $$	LAW ENFORCEMENT ON ACCIDENT SCENE?	AGENCY NAME
			☐ YES ☐ NO	

WEATHER (CHECK ALL THAT APPLY):
☐ CLEAR ☐ RAIN
☐ CLOUDY ☐ SNOW
☐ FOG ☐ HAZY

WATER CONDITIONS
☐ CALM (waves less than 6")
☐ CHOPPY (waves 6"-2')
☐ ROUGH (waves 2'-6')
☐ VERY ROUGH (waves >6')

WIND CONDITIONS
☐ NONE
☐ LIGHT (0-6 mph)
☐ MODERATE (7-14 mph)
☐ STRONG (15-25 mph)
☐ STORM (over 25 mph)

TEMPERATURE
WATER AIR

VISIBILITY
☐ GOOD
☐ FAIR
☐ POOR

STRONG CURRENT
☐ YES ☐ NO

TYPE OF ACCIDENT (CHECK ALL THAT APPLY):
☐ CAPSIZING
☐ COLLISION WITH VESSEL
☐ COLLISION WITH FIXED OBJECT
☐ COLLISION WITH FLOATING OBJECT
☐ FALL OVERBOARD
☐ FALL IN BOAT
☐ FIRE / EXPLOSION (fuel)
☐ FIRE / EXPLOSION (other than fuel)
☐ FLOODING / SWAMPING
☐ SINKING
☐ STRUCK BY BOAT / PROPELLER
☐ SKIER MISHAP
☐ OTHER ______

CAUSE OF ACCIDENT (CHECK ALL THAT APPLY):
☐ IMPROPER LOOKOUT / INATTENTION
☐ OPERATOR INEXPERIENCE
☐ EXCESSIVE SPEED
☐ MACHINERY FAILURE
☐ EQUIPMENT FAILURE
☐ IMPROPER LOADING
☐ OVERLOADING
☐ HAZARDOUS WEATHER / WATER
☐ RESTRICTED VISION
☐ IGNITION OF SPILLED FUEL / VAPOR
☐ IMPROPER ANCHORING
☐ ALCOHOL USE
☐ FAILURE TO VENT
☐ OTHER ______

DESCRIBE WHAT HAPPENED AND WHAT YOU COULD HAVE DONE TO PREVENT THIS ACCIDENT
(Explain the cause of death or injury, medical treatment, etc. Use sketch if helpful. If needed, continue description on additional paper.)

VICTIM OR WITNESS INFORMATION

VICTIM / WITNESS NAME & ADDRESS	VICTIM / WITNESS STATUS	RIDING IN VESSEL #	AGE	INJURY DESCRIPTION	CAUSE OF DEATH	COULD VICTIM SWIM?	LIFE JACKET WORN?
	☐ INJURED ☐ DEAD ☐ WITNESS ONLY				☐ DROWNING ☐ TRAUMA ☐ OTHER	☐ YES ☐ NO	☐ YES ☐ NO
	☐ INJURED ☐ DEAD ☐ WITNESS ONLY				☐ DROWNING ☐ TRAUMA ☐ OTHER	☐ YES ☐ NO	☐ YES ☐ NO
	☐ INJURED ☐ DEAD ☐ WITNESS ONLY				☐ DROWNING ☐ TRAUMA ☐ OTHER	☐ YES ☐ NO	☐ YES ☐ NO
	☐ INJURED ☐ DEAD ☐ WITNESS ONLY				☐ DROWNING ☐ TRAUMA ☐ OTHER	☐ YES ☐ NO	☐ YES ☐ NO

DBW FORM BAR-1 (1/00)

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For a copy of this form, call toll free (888) 326–2822.

Appendix C (Whitewater Class System)

The following classification is based on a guide for rivers established by the American Whitewater Affiliation. The river should be considered one class more difficult than normal if the water temperature is below 50˚ Fahrenheit, or the trip is in a wilderness.

Class I • Easy

Fast-moving water with riffles and small waves. Few obstructions, all obvious and easily avoided by paddlers with little training. Risk to swimmers is slight; self-rescue is easy.

Class II • Novice

Straightforward rapids with wide, clear channels, which are evident without scouting. Occasional maneuvering may be required, but rocks and medium-size waves are avoided easily by trained paddlers. Swimmers are seldom injured and group assistance, while helpful, is seldom needed.

Class III • Intermediate

Rapids with moderate, irregular waves, which may be difficult to avoid and which can swamp an open canoe. Complex maneuvers in fast current and good boat control in tight passages or around ledges are often required; large waves or "strainers" such as fallen trees, bridge pilings and undercut rocks may be present but are easily avoided. Strong eddies and powerful currents can be found, particularly on large-volume rivers. Scouting is advisable for inexperienced parties. Injuries while swimming are rare; self-rescue is usually easy but group assistance may be required to avoid a long swim.

Class IV • Advanced

Intense, powerful but predictable rapids requiring precise boat handling in turbulent water. Depending on the character of the river, it may feature large, unavoidable waves and holes or constricted passages demanding fast maneuvers under pressure. A fast, reliable eddy turn may be needed to initiate maneuvers, scout rapids, or rest. Rapids may require "must" moves above dangerous hazards. Scouting is necessary the first time down. Risk of injury to swimmers is moderate to high, and water conditions may make self-rescue difficult. Group assistance for rescue is often essential but requires practiced skills. A strong Eskimo roll is highly recommended.

Class V • Expert

Extremely long, obstructed, or very violent rapids, which expose a paddler to above-average danger. Drops may contain large, unavoidable waves and holes or steep, congested chutes with complex, demanding routes. Rapids may continue for long distances between pools, demanding a high level of fitness. What eddies exist may be small, turbulent, or difficult to reach. At the high end of the rating scale, several of these factors maybe combined. Scouting is mandatory but often difficult. Swims are dangerous, and rescue is difficult even for experts. A very reliable Eskimo roll, proper equipment, extensive experience, and practiced rescue skills are essential for survival.

Class VI • Extreme

These runs often exemplify extremes of difficulty, unpredictability and danger. The consequences of errors are very severe and rescue may be impossible. For teams of experts only, at favorable water levels, after close inspection and taking of all precautions. This class does not represent drops thought to be unrunnable, but may include rapids that are only occasionally run.

Generally, Class I and II rivers can be run in open canoes. Some higher-class rivers are suitable in open canoes if boaters are highly skilled, if time is allowed for emptying water from the boat, and if extra flotation is firmly installed in the boat. A CLASS OF RIVER MAY CHANGE ACCORDING TO THE AMOUNT OF RIVER RUNOFF AND THE DEPTH OF WATER AT A GIVEN POINT.

Glossary

A

Abaft Toward the rear of the boat or vessel

Aboard On, in or into a boat.

Abreast Side by side; by the side of.

Aft Describing the after section of a vessel, or things to the rear of amidships and near the stern.

Ahead In a forward direction.

Aid to Navigation (ATON) Any device external to a vessel specifically intended to assist navigators in determining their positions or safe courses, or to warn them of dangers or obstructions.

All-Round Light A light which shows all the way around; 360 degrees.

Amidships Midway between the bow and the stern on a boat.

Anchor A forging or casting shaped to grip the sea bottom and, by means of a cable or rope, hold a boat in a desired position.

Anchorage A suitable place for anchoring in relation to the wind, seas and bottom.

Anchor Line A line used to hold a vessel fast to the anchor.

Astern Behind or towards the rear of a vessel.

Athwart Across.

Auxiliary Engine A "stand by" source of power.

B

Bail To remove water from a boat by pump or bailer.

Bass Boat A modified skiff or jon boat. Usually has a covered forward deck and a powerful motor to get to fishing places quickly. Used on lakes and rivers.

Bathers Swimmers.

Beam Imaginary line amidships at right angles to keel of vessel. Also vessel's width amidships.

Bearing The direction of an object from an observer.

Berth A bed or boat slip.

Bight The part of the rope or line, between the end and the standing part, on which a knot is formed.

Bilge The lower internal part of a boat's hull.

Bilge Pump A submersible pump that is used to pump water out of the bilge.

Blind Bend An area in which another vessel may be obscured from view.

Boat A waterborne craft smaller than a ship.

Bollard A fitting usually on a dock, pier or wharf to which mooring lines can be attached.

Bow The forward part or front of the boat.

Bowline The name of a commonly used knot.

Bow Line A docking line leading forward from a vessel's bow.

Buoy A floating aid to navigation.

C

Cabin A compartment for passengers or crew.

Can Buoy A green cylindrical buoy bearing an odd number and marking the port side of a channel from seaward.

Canoe A lightweight, long, narrow boat propelled by a paddle or sail.

Capacity Plate Gives maximum weight of passengers and gear and permitted horse-power of the motor. Must be in full view of the operator's station.

Capsize To turn over.

Carburetor Backfire Flame Arrestor Required equipment on all motorboats except outboards and diesels. Reduces chance of fire caused by sparks in internal combustion engines.

Cast Off To release all mooring lines.

Catamaran Boat with two hulls connected by a deck.

Centerboard A pivoting board or metal plate, housed in a slotted trunk, which can be raised or lowered. When lowered it reduces a sailboat's leeway (tendency to sideslip).

Chafing Gear Cloth, tape, or material attached around a line or rigging to prevent wear or chafing.

Channel The part of a body of water deep enough for navigation through an area otherwise not suitable; usually marked by ATONS or range markers.

Chart A map of a body of water that contains piloting information.

Chine The intersection of the sides and bottom of a boat.

Cleat A piece of wood or metal with projecting ends to which lines are made fast.

Clew The lower, aft corner of a sail.

Clove Hitch A hitch temporarily fastening a line to a spar, piling, or another line.

Closure The act of closing the distance between two vessels.

Compass The instrument which shows the heading of a vessel.

Coupler A device on the tongue of a trailer; attaches the trailer to the ball of the towing vehicle.

Course The average heading and the horizontal direction in which a vessel is intended to be steered.

Cowl Hooded opening that provides ventilation.

Crossing Situation The situation in which one vessel moves across the path of another.

Cruiser A seaworthy craft that usually has some sort of living quarters.

Cuddy Cabin A small shelter cabin.

Current The movement of the water in a horizontal direction.

D

Danforth Anchor A patented lightweight anchor characterized by long, narrow twin flukes, pivoted at one end of the relatively long shank.

Danger Signal A series of five or more short blasts on a vessel's whistle, air horn, or other signaling device.

Danger Zone The area of a vessel from dead ahead to 22.5 degrees abaft its starboard and port beams.

Daybeacon An ATON consisting of one or more daymarks and the piling to which they are attached.

Daymark A signboard shaped like a diamond, square, triangle or octagon.

Deck Any permanent covering over a compartment.

Dinghy A small rowboat.

Distress Signal See Visual Distress Signal. Also:
1. Mayday, Mayday, Mayday.
2. Any of a number of devices for showing a vessel needs help.

Diuretic Drug or substance that increases the output of urine causing dehydration. Caffeine in coffee or soft drinks is an example.

Diving Flag The white-and-blue, swallow-tail, Alpha signal flag, or a red flag with a white diagonal stripe used to indicate a diver in the area.

Dock A place to moor a vessel; the act of mooring a vessel to a pier or wharf.

Documented Vessel Vessel registered with the U.S. Coast Guard.

Draft The depth of a vessel's keel and propeller below the waterline.

Dry Chemical The material in some Class B fire extinguishers; baking soda.

E

Eddy A current that moves in the opposite direction of the main current.

EPIRB (Emergency Position Indicating Radio Beacon) An automatic radio transmitter that should be carried on any boat that is operating off shore. When activated, it sends a signal that there is an emergency and guides searchers to the position.

Eskimo Roll The primary self-rescue technique for kayakers to right themselves after capsizing. The paddler remains sealed in the kayak while performing a series of steps that brings them upright.

F

Fairway A navigable part of a river or bay through which vessels enter or depart; a part of a harbor or channel that is kept open and unobstructed.

Federally Navigable Waters The seas and waters which provide a "road" for transportation between two or more states or to the sea.

Fenders Objects placed along the side of the boat to protect the hull from damage.

Ferry When referring to river travel, a method used to navigate across a river current with little or no downstream travel.

Figure Eight Knot A knot in the form of a figure eight, placed in the end of a line to prevent the line from passing through a grommet or a block.

Fishtail The side-to-side motion of a trailer when it does not have sufficient weight on its tongue.

Flame Arrestor A safety device on an inboard or stern drive engine which prevents an explosion from an exhaust backfire.

Flare 1. The outward spread of the boat's sides from the waterline to the rail at the bow. 2. A visual distress signaling device.

Float Plan A document that describes the route(s) and estimated time of arrival of a particular voyage. It usually includes a description of the vessel, its equipment, and its passengers.

Forward Toward the bow.

Fouled Any piece of equipment that is jammed or entangled, or dirtied.

Four-Pole Electrical Connector An electrical connector commonly used to connect a tow vehicle and a trailer. Comes in two different and incompatible shapes, flat and round.

Freeboard The vertical distance measured on a boat's side from the waterline to the gunwale.

G

Gear A general term for ropes, blocks, tackle and other equipment.

Give-Way Vessel Required to take early and obvious action to avoid a collision when nearing another vessel. Does not have the right-of-way.

Grab Rails Hand-hold fittings mounted on cabin tops and sides for personal safety when moving around the boat.

GPS Short for Global Positioning System. This is a satellite system used for highly accurate navigation and pinpointing of location.

Grapnel A straight-shank anchor with four or five curved claw-like arms and no stock.

Gunwale The upper edge of a boat's side. (Pronounced gun-nel.)

H

Hailing Port A port to which a boat is documented with the U.S. Coast Guard.

Hard-Chined Hull shaped with flat panels joined at an angle.

Hatch An opening in a boat's deck for persons or cargo to go below.

Head A marine toilet.

Head-On The situation which exists when two boats approach each other and each sees both the red and green sidelights of the other.

Helm The tiller, wheel or steering gear of a vessel.

Highside In rafting when a team of paddlers puts their weight on the downstream end of the raft to prevent a "wrap."

Hitch 1. A knot used to secure a rope to another object or to another rope, or to form a loop or a noose in a rope. 2. A trailer hitch which is an attachment on the tow vehicle where the trailer is directly attached.

Holes In river terminology a hole is a place where water flows over a submerged object, creating a reverse current that can hold a buoyant object.

Horsepower The equivalent of a lift of 550 pounds one foot in one second.

Hull The body of a boat.

Hull ID Number A number that includes the manufacturer's ID code, hull serial number, date of certification, and model year, and is permanently affixed to a vessel's hull.

Hydrology In river terminology, denotes the science dealing with the properties of flowing water.

Hyperthermia A physical condition where the body gains heat faster than its ability to cool itself.

Hypothermia A physical condition where the body loses heat faster than it can produce it.

I

Inboard Engine An engine often mounted amidships; connects to the propeller by a propeller shaft.

Inflatable A vessel which is inflated by air or carbon dioxide; can be collapsed for transporting.

J

Jet Drive A special form of a stern drive engine; pumps large amounts of water which is "jetted" out to propel the craft.

Jon Boat A flat-bottomed boat with square ends used on rivers and lakes; often used by people fishing or hunting.

K

Kayak An Eskimo canoe. A water-tight boat; if it turns over, water does not enter; easily righted.

Keel The permanently positioned, fore-and-aft backbone member of a boat's hull.

Knot A bend in a line. Also, a unit of speed equal to one nautical mile (6,076.10 feet) an hour or 1.2 statute (land) miles an hour.

L

Lanyard 1. A short piece of rope or cord used for fastening something or securing rigging. 2. For PWC, a cord with a clip attached that acts as a key permitting the engine to be turned on.

Latitude The distance North or South of the equator, measured in degrees.

Line Rope and cordage used aboard a vessel.

Longitude The distance in degrees east or west of the meridian at Greenwich, England.

M

Marine Sanitation Device (MSD) A device fitted to a marine toilet to prevent the dumping of raw sewage into the water.

Marlinespike A tool for opening the strands of a rope while splicing.

Mast A spar set upright to support rigging and sails.

Masthead Light A light at the top of a mast; in a small vessel may be on a staff or post. Usually shines forward; covers an arc of 225 degrees.

Mooring Commonly, the anchor, chain, buoy, pennant, etc., by which a boat is permanently anchored in one location.

Mooring Line A line for making a vessel fast to a pier, dock or mooring buoy.

Motorboat Any watercraft 65' or less in length propelled by machinery, whether or not such machinery is the principal source of propulsion.

Mushroom Anchor A stockless anchor with a metal bowl at the end of its shank. Large ones are used for anchoring mooring buoys.

N

Nautical Mile One minute of latitude; approximately 6076 feet or 1.2 statute (land) miles.

Navigation The art of conducting a ship using compasses, charts and other navigational equipment in order to get from point to point.

Navigation Rules The regulations governing the movement of vessels in relation to each other, generally called steering and sailing rules.

Nun Buoy A conical, red buoy bearing an even number and marking the starboard side of a channel from seaward.

O

Oar A long, wooden instrument with a flat blade at one end, used for propelling boats.

Outboard Motor A detachable motor mounted on a boat's transom.

Outdrive A type of propulsion system for boats. The inboard motor operates the exterior drive, also called an inboard/outboard.

Overboard Over the side.

Overtaking A vessel coming up on another; at night the overtaking vessel sees the stern light of the other vessel.

P

Paddle A means for propelling a canoe, raft or kayak.

Paddle Craft Any boat whose primary propulsion is a paddle. Usually refers to canoes, rafts and kayaks.

Pay Out Line To release line in a slow and controlled manner.

Personal Watercraft (PWC) Watercraft usually driven by jet pumps instead of propellers; often intended for a solitary rider.

PFD Personal Flotation Device. (Life-jacket)

Pier A loading or mooring platform.

Planing A boat is said to be planing when it is essentially moving over the surface of the water rather than through the water.

Planing Hull Type of hull that is shaped to lift out of the water at high speed and ride on the surface.

Port The left side of a boat when you are (inside) facing the bow; also a destination or harbor.

Powerboat A vessel propelled by mechanical means.

Prolonged Blast A whistle signal four to six seconds long.

Propeller Wheel or screw mechanism that pushes water aft to propel the boat.

R

Rail A protective edge on the deck of a boat.

Regulatory Marker A white and orange marker used in the USWMS to indicate danger, restricted operations, or an excluded area.

Restricted Visibility Any condition in which visibility is restricted by fog, mist, falling snow, heavy rainstorms, sandstorms, smoke, or other causes.

Rigging The general term for all the lines (ropes) of a vessel.

Right-of-Way The right and duty to maintain course and speed.

Rode An anchor line and/or chain.

Rope In general, cordage as it is purchased at the store. When it comes aboard a vessel and is put to use it is referred to as a "line."

Rowboat A small, flat-bottom, pointed boat propelled by oars.

Rowing Shell Long, narrow and relatively unstable craft powered by oars. Used for recreation and racing.

Rudder The control surface, usually aft by which a boat is steered.

Rules of the Road The nautical traffic rules for prevent ing collisions on the water.

Running Lights Lights required to be shown on boats underway between sundown and sunup, and during periods of reduced visibility.

S

Sailboard Also known as a windsurfer. A board similar to a surfboard that is propelled by wind and sails.

Sailboat A boat powered by wind and sails. May or may not have an auxiliary engine.

Ship A larger vessel usually thought of as being used for ocean travel. A vessel able to carry a "boat" on board.

Short Blast A one-second sound signal given by a vessel's whistle.

Sidelights The red and green lights marking the port and starboard sides of a vessel.

Spar Any pole, as a mast, yard, boom or gaff, supporting or extending a sail of a ship.

Spar Buoy A channel marker that looks like a tall, slender pole.

Special Purpose Buoy A buoy having no lateral significance used to indicate an anchorage area, fish net area, spoil grounds, military exercise zone, etc.

SPF Short for sun protection factor. This is a rating indicator of how effective a sunscreen is in blocking the harmful effects of the sun.

Spring Line Fore and aft lines used in mooring to prevent a boat from moving forward or astern while fast to a pier.

Square Knot A knot used to join two lines of similar size. Also called a reef knot.

Stand-On Vessel The vessel required to first hold course and speed when nearing another vessel; the vessel which has the right-of-way. However, the stand-on vessel is also required to take any action necessary to avoid a collision if the give-way vessel does not take early and significant action.

Starboard The right side of a boat when you are (inside) facing the bow.

Steal Your Wind When any vessel or object blocks a sailboat's wind.

Steering Nozzle A device for directing a stream of water from left or right in a jet-pro pelled engine, thereby affecting the vessel's heading or course.

Stern The aft end or back of a boat.

Stern Drive Engine A vessel with an engine mounted inside the hull near its stern and with its propelling mechanism attached to the transom.

Stern Line A line leading aft from the stern of a boat to a pier.

Strainer On a river, any obstacle that the current flows through. Willows, fallen trees or brushy plants are common examples.

Stow To store items neatly and securely.

Swamp To fill with water, but not sink, a boat or vessel.

Swimmer's Position In a river, floating on your back, keeping your toes up and your feet pointed downstream.

T

Throttle A device for regulating the amount of fuel delivered to the engine to control speed.

Tide The alternate rise and fall of waters caused by the gravitational attraction of moon and sun.

Tiller A bar or handle for turning a boat's rudder or an outboard motor.

Tongue The front area of a trailer; contains the coupler or hitch that attaches to the towing vehicle.

Towing Pulling a vessel through the water; an assistance or rescue maneuver.

Transom The transverse planking which forms the aft end of a small, square-ended boat. (Outboard motors are usually attached to a transom.)

Trimaran Boat with three hulls, the center one the largest.

U

Underway In motion, said of a vessel when not moored, at anchor or aground.

Uniform State Waterway Marking System (USWMS) A system of marks used on state waters to warn boaters of dangers and to provide general information and direction.

Unscheduled Swim An unexpected fall into the water from a paddle craft. The person overboard should assume swimmer's position.

Utility Boat A small boat used for transportation, fishing, hunting, and other purposes; includes dinghies and prams.

V

V Bottom (Vee) A hull with the bottom section in the shape of a "V."

Vessel Every kind of watercraft, other than a seaplane on the water, capable of being used as a means of transportation on water.

VHF-FM The frequency band of "ship-to-shore" radios used on small vessels.

Visual Distress Signal A signal to show that you need help and to guide rescuers to a search-and-rescue mission.

W

Wake Moving waves, created by vessel motion. Track or path that a boat leaves behind it, when moving across the water.

Waterline The line where the surface of the water hits the boat's hull. Can vary on an individual boat depending on the weight of the load.

Weighing Anchor Raising the anchor when preparing to get underway.

Weight Carrying Hitch A trailer hitch which fastens to the towing vehicle's frame and bumper.

Whipping Twine wound around a line to prevent fraying or abrasion.

Whitewater Foaming white-tipped water marked by whitecaps, rapids, etc.

Windsurfer Also known as a sailboard. A board similar to a surfboard that is propelled by wind and sails.

Wrap In rafting, canoeing or kayaking when a raft is pushed against a rock or other obstacle and held there by a strong current.

Final Exam

This exam is designed to test your understanding of safe boating. It has 50 multiple choice questions. The final exam answer card is on page 107. Cut out the exam answer card and print your name and address information on the card. Read each exam statement carefully. Choose the best answer and use a pencil or pen to mark your answers on the answer card. Fill in the appropriate box next to each numbered item. When you have answered all the questions, mail the card for grading and processing. If you pass the exam, your certificate will be mailed to the address listed on your exam card.

1. The weight on a trailer hitch should be no more than:

a. 5 percent to 7 percent of the total tow weight
b. 15 percent of the total tow weight
c. 20 percent to 25 percent of the total tow weight
d. 50 percent of the entire vessel weight

2. While rowing a small utility boat at night:

a. carry a transistor radio for the news
b. carry a flashlight to warn other boats of your presence
c. keep to the center of the channel to avoid shore hazards
d. talk softly in order not to disturb other boaters

3. When wearing a life jacket in the water, your flotation is affected by:

a. heavy night air
b. the oxygen content of the water
c. the clothing being worn
d. all of the above

4. When jumping another boat's wake, a personal watercraft should:

a. stay at least 100 feet away from the other vessel
b. increase speed so that the personal watercraft is not thrown off course
c. slow down to reduce the danger of capsizing
d. turn off the engine and wait for the wake to pass

5. Fenders:

a. make the boat look good
b. prevent damage to the hull of the boat and docks
c. provide additional storage for passengers
d. are useful on small boats only

6. It is illegal for adults 21 and older to operate a boat with a blood alcohol concentration of:

a. .06 percent or more
b. .04 percent or more
c. .08 percent or more
d. .12 percent or more

7. Some natural stress factors that may affect safe boating are sun, wind, _____ and _____.

a. SLOW signs, tornadoes
b. waves, noise
c. traffic, earthquakes
d. radiation, debris

8. The minimum unsupervised age for operating a motorboat of more than 15 horsepower is:

a. 21
b. 18
c. 16
d. 12

9. While you are fueling, the nozzle should be in contact with the fill pipe:

a. to ensure you do not spill fuel
b. to reduce the possibility of static electricity buildup possibly creating a spark
c. to maximize the fuel delivery pressure to the motor
d. all of the above

10. All passengers should wear properly fitted U.S. Coast Guard-approved life jackets under which of the following conditions:

a. in rough seas
b. more than 3 miles off shore
c. when the wearers are not good swimmers
d. all of the above

11. If the boat's drive belt breaks while underway:

a. repair it with masking tape
b. tie a piece of line around the pulleys and secure with a square knot
c. restart the engine; it does not need a drive belt
d. replace with a belt used for clothing

12. Five or more short and rapid blasts of a whistle indicates:

a. all clear
b. pass to the rear
c. a dangerous situation in the area
d. heading home to dump the sewage

13. You are a courteous boater if you:

a. know the right-of-way rules
b. keep a safe distance from docks, bathers and fishing boats
c. do not spray other boats or people with your wake
d. all of the above

14. If you fall into a fast-moving river from a raft you should:

a. get into the swimmer's position
b. stand and walk to shore
c. grab onto floating branches
d. any of the above

15. It is against the law to exceed 5 miles per hour:

a. within 100 feet of a swimmer
b. within 200 feet of a swimming beach
c. within 200 feet of a dock or platform when vessels are tied to it.
d. all of the above

16. When you are returning from sea, a green can buoy marks the:

a. port side of the channel
b. safe entrance and exit of the channel
c. starboard side of the channel
d. direction to the pier

17. Before you operate your personal watercraft, you should check;

a. the fuel and oil levels
b. that every passenger has a U.S. Coast Guard-approved life jacket
c. that the hull has no cracks
d. all of the above

18. Too much weight on the hitch could cause a tow vehicle to:

a. lower the focus of the headlights so as not to properly illuminate the road ahead
b. have less gas mileage
c. make wider turns
d. raise the front end and make the vehicle difficult to control

19. Ventilation systems are required on all gasoline-powered boats with enclosed engines and fuel tank compartments because:

a. one spark can cause an explosion if gasoline fumes are present
b. they are useful during hot weather
c. there is more pollution over land than water
d. the system keeps noise down in the cabin

20. Drinking alcohol or using other drugs while boating:

a. reduces your ability to respond to dangerous situations
b. increases the harmful effects of sun, waves, wind and noise
c. raises your chances of getting into an accident
d. all of the above

21. In a small boat, always attach the anchor line to:

a. the stern
b. the side cleat
c. your life jacket
d. the bow

22. It is against the law for a person younger than 21 to operate a vessel with a blood alcohol level of more than:

a. .04 percent
b. .08 percent
c. .01 percent
d. .10 percent

23. To be an environmentally conscious boater, you should:

a. think in terms of preventing even a drop of fuel from entering the water
b. never dump human waste overboard
c. properly dispose of all plastic or trash and remember to recycle
d. all of the above

24. It is illegal to dump packing material in the ocean:

a. within 2 miles of shore
b. within 10 miles of shore
c. within 25 miles of shore
d. 25 miles or more off shore

25. A deep-vee hull:

a. travels well in shallow water
b. provides a smooth ride in choppy water
c. planes easily
d. requires less power than a flat-bottom boat

26. While storing your boat, you should avoid using nylon tarps because:

a. they can trap moisture
b. they are expensive and cheaper fabrics are available
c. they could attract viruses which could damage your vessel's electronics
d. they are non-recyclable and could harm the ozone

27. Boat-to-boat communication can be done by:

a. sound signals
b. light signals
c. radio signals
d. all of the above

28. A sailboat's centerboard and keel are:

a. designed to keep the boat from going sideways in the wind
b. designed to drag significantly through the water
c. flat to plane more easily
d. designed to travel faster in reverse

29. To prevent hypothermia, a person can wear:

a. immersion suits
b. warm synthetic clothing
c. wet suit
d. all of the above

30. The term "Red, Right, Returning" reminds us to keep the red buoys and markers to our right when returning:

a. to sea or ocean
b. to harbor or port
c. to a fueling station
d. to the Marine Patrol office or U.S. Coast Guard Station

31. Properly displayed boat numbers must be at least three inches high, in bold block letters and:

a. be displayed on the rear half of one side of the bow of the boat
b. read from right to left
c. match the color of the boat
d. read from left to right

32. A first time whitewater kayaker should start on a class:

a. VI river
b. V or IV river
c. I river
d. II or III river

33. Diamond-shaped markers commonly seen on state and designated-state waters indicate:

a. a regatta is underway
b. one-way traffic
c. a mooring buoy
d. danger

34. If your boat capsizes while whitewater rafting it is also called:

a. a nose dive
b. a wrap
c. a flip
d. a scheduled swim

35. Give a copy of your float plan to:

a. A responsible relative or friend
b. the Department of Motorized Vehicles and Vessels
c. the harbor maintenance office
d. a qualified marine surveyor

36. U.S. Coast Guard-approved visual distress signals include:

a. cellular telephone
b. red flag with a white diagonal stripe
c. red meteor flares, for day and night use
d. a note in a corked bottle

37. Boating accidents involving more than $500 in damage must be reported to:

a. any police officer immediately
b. the Federal Bureau of Investigation
c. the California Department of Boating and Waterways within 10 days
d. the U.S. Coast Guard's accident reconstruction unit within 15 days

38. While water skiing, the observer in the boat must:

a. carry a red or orange flag no less than 12-inches by 12-inches
b. drive the boat
c. be 16 years or older
d. have completed an eye exam

39. When two personal watercraft are crossing at right angles:

a. the craft to the left should speed up and pass in front
b. the craft to the right should slow and pass to the rear
c. the craft to the right has the right-of-way, and should maintain course and speed
d. the craft first to the collision point has the right-of-way

40. Sailboats operating under sail power:

a. never have the right of way
b. always have the right of way
c. have the right of way over powerboats in most situations
d. have no rights, according to the National Association of Boating Law Administrators

41. In addition to one Type I, II, or III life jacket for each person on board, one type IV throwable device is required:

a. for all boats regardless of length
b. only for canoes, kayaks and sailboards
c. only for boats 16 feet in length and over
d. only for boats less than 16 feet in length

42. Basic safety while on the water involves:

a. removing a fish hook from a finger
b. ability to swim 100 yards and tread water for five minutes
c. knowing the terrain of the shoreline
d. having your motorboat driver's license on board

43. Paddle craft:

a. must be paddled by two or more people
b. never have the right-of-way, because they are more maneuverable
c. depend on a tiller to turn, in most cases
d. always have the right-of-way, except when crossing a shipping channel

44. A strainer in a river is:

a. the rock bed
b. a tree limb in moving currents
c. an area where the current reverses direction
d. a portage through the woods

45. Vessel sewage discharged from vessels is a pollution problem. It is against the law under the Federal Clean Vessel Act to discharge vessel sewage anywhere within:

a. 25 miles of shore
b. the 3 mile U.S territorial limit, or in any inland waterway
c. a marina's pumpout tank
d. the North American hemisphere

46. The Federal Waterway Marking System:

a. uses blue and orange lateral aids to mark the sides of channels that boaters can see when returning to port
b. does not use lighted buoys or daymarks
c. guides navigation on coastal waterways spanning more than one state
d. none of the above

47. ATON stands for:

a. Aids to Navigation
b. Assistance to Others in Need
c. Association of Tug Operating Navigators
d. Academy of Tides, Oceans and Navigating

48. If your personal watercraft capsizes, you should right it:

a. with the help of another vessel
b. by using the "Heimlich maneuver"
c. at shore
d. according to the manufacturer's instructions

49. A certificate of number:

a. must be carried on board whenever the boat is operated
b. indicates the boat's bank financing
c. tells the passenger capacity
d. must be displayed on the forward half of each side of the bow.

50. You should refuel your personal watercraft:

a. while in the water
b. while on the trailer in the parking lot or fuel station
c. and top off the tank while beached
d. all of the above

Final Exam Answer Card

Test begins on page 104

Name _____

Address _____

City _____ State ____ Zip _____

Signature _____ Age ____ Sex ☐M ☐F

Telephone _____

Do you own a boat? _____ H.P. _____

What type? _____ Length _____

☐ Check here if you are taking this exam under court order.

Instructions:
A box appears for each column marked A, B, C or D. Select the best answer and use a pencil or pen to fill in the box next to the question. If you changed the answer, be sure to completely erase the first mark. Only one box should be marked for each question. When you have answered all the questions, fill in the order information and mail the card for grading and processing. Upon successful completion, your certificate will be mailed. **(2001/2002 Edition)**

	A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D
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	A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D

CUT ALONG DASHED LINE

Final Exam Answer Card

Test begins on page 104

Name _____

Address _____

City _____ State ____ Zip _____

Signature _____ Age ____ Sex ☐M ☐F

Telephone _____

Do you own a boat? _____ H.P. _____

What type? _____ Length _____

☐ Check here if you are taking this exam under court order.

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	A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D
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	A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D

CUT ALONG DASHED LINE

CUT ALONG DASHED LINE

FREE BOATING PUBLICATIONS

The Department of Boating and Waterways publishes a series of free boating and pamphlets. Fill in the quantity desired for each title you order, your name and address, and mail. Large orders must have a street address, not a P.O. Box. Allow one month for delivery. For more information, call (916) 263-1331.

_____
NAME (PLEASE PRINT)

_____
ADDRESS

_____
CITY, STATE, ZIP

_____
TELEPHONE NUMBER

NO. COPIES

___ ABCs of the California Boating Law
___ AquaSMART Activity Book for Kids (English)
___ AquaSMART Activity Book for Kids (Spanish)
___ Basic Safety Rules for Boating Sticker
___ Boating Alert: Hydrilla
___ Boating Films, Videos, Slide and Sound Catalog
___ Boating Fuel Conservation Tips
___ Boating Safety Card
___ BUI Information Card
___ California Boating Course

Boating Trail Guide Series:
___ American River Parkway (Nimbus Dam to Sacramento River)
___ Colorado River (Davis Dam to Parker Dam)
___ Colorado River (Blythe to Imperial Dam)
___ Kern River
___ Merced River (Bagby to El Portal)
___ North and Middle Forks of the American River
___ Sacramento River (Redding to Red Bluff)
___ Sacramento River (Woodson Bridge to Colusa)
___ Smith River
___ South Fork of the American River
___ Tuolumne River (Don Pedro Dam to Yosemite National Park)
___ A Consumer's Guide to Boating Lake Tahoe

___ Charts Agents List (Limit: 1 per order)
___ Clean Boating Habits
___ A Consumer's Guide to Boating Lake Tahoe
___ Drowning Prevention Checklist
___ Facts About Boating and Alcohol
___ Facts About Boating Safety Classes
___ Facts About Marine Pollution Laws
___ How to Buy a Used Boat
___ Marine Security
___ Quiet Boating for Everyone
___ Rescue Breathing Card
___ Shipshape Sanitation, MSDs and Pumpouts

Safe Boating Hints Series:
___ Colorado River
___ Delta
___ Fire Extinguishers
___ Hunters and Fisherman
___ Lakes and Reservoirs
___ Lake Tahoe
___ Morro Bay
___ Northern Coast
___ Paddle Craft
___ Personal Floatation Devices
___ Personal Watercraft
___ Sacramento River
___ Salton Sea
___ San Francisco Bay
___ Safety Hints for Water-Skiing
___ Safety Hints for Windsurfing
___ Southern Coast
___ Tomales Bay
___ Towing Tips for Trailer Sailors

Vessel Pumpout Locator Cards:
___ North-Coast - Inland
___ San Francisco Bay Area/Delta
___ Monterey - SLO - Santa Barbara
___ Ventura - Los Angeles - Orange

Student Curriculum Materials:
AquaSMART (Grades K-2)
___ Teacher's Guide with Activities (Limit 1)
___ Spanish Activities Supplement (Limit 1)

AquaSMART (Grades 3-5)
___ Teacher's Guide with Activities (Limit 1)
___ Spanish Activities Supplement (Limit 1)

AquaSMART (Grades 6-8)
___ Teacher's Guide with Activities (Limit 1)

AquaSMART Boating (Grades 9-12)
___ Student Text
___ Instructor Guide (Limit 1)

Place in envelope and mail to:

DEPARTMENT OF BOATING AND WATERWAYS
Education Unit
2000 Evergreen Street, Suite 100
Sacramento, CA 95815-3888

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Place in envelope and mail to:

DEPARTMENT OF BOATING AND WATERWAYS
Education Unit
2000 Evergreen Street, Suite 100
Sacramento, CA 95815-3888

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Place in envelope and mail to:

DEPARTMENT OF BOATING AND WATERWAYS
Public Information Unit
2000 Evergreen Street, Suite 100
Sacramento, CA 95815-3888

Notes


DON'T CRASH YOUR OWN PARTY
-Yikes!
TAKE A BOATING SAFETY COURSE

Notes

Notes

Notes

The California Department of BOATING AND WATERWAYS

The Department of Boating and Waterways, having served the boating community for more than 40 years, has responsibility for the following functions:

1. Funding and developing boating facilities for public access to the waterways.
2. Funding local marine enforcement activities for agencies that do not have sufficient local revenue.
3. Training boating law enforcement officers.
4. Licensing yacht and ship brokers as a means of consumer protection.
5. Conducting an aquatic weed control program in the Sacramento-San Joaquin Delta.
6. Conducting research projects to further the knowledge of oceanic forces, erosion and shoreline conditions.
7. Assisting local and federal agencies in the design and construction of beach erosion control projects.
8. Providing a program for the safety and education of boaters through the publication and distribution of safety publications, videos and film; providing educational materials and curricula to the California public school system; and funding college boating aquatic centers and other non-profit boating safety organizations.
9. Studying potential whitewater river use, publishing river trail maps, funding the development of river access sites, and reviewing proposed hydroelectric and other projects that impact boating.

BOATING SAFETY REACHES OUT IN CALIFORNIA!

500,000	Elementary and secondary students were educated in boating and aquatic safety during the 2000-2001 school year.
120,000	Students and non-students trained at 14 aquatic learning centers in 2000.
30,000	Persons received the correspondence California Boating Safety Course in 2000.
1,000,000	Brochures on boating safety were distributed in 2000.

Continue Your Boating Safety Education

Free boating safety classes are conducted by several organizations throughout the State of California. The largest of these organizations are the United States Coast Guard Auxiliary and the United States Power Squadrons. A primary mission of both organizations is to promote safety afloat through education, and you need not be a member to take advantage of the basic instruction offered.

Introductory classes include basic information on aids to navigation, rules of the road, charts and compasses, boating regulations, marlinespike seamanship, motorboat handling and trailering practices. Some Auxiliary Flotillas also offer public courses on principals of sailing and coastal piloting.

A 24-hour, toll-free information service is available to California boaters. The service is designed to provide boaters with up-to-date information on boating classes offered throughout the state. This includes classes given by the U.S. Power Squadrons, U.S. Coast Guard Auxiliary and other local organizations such as the American Red Cross. Callers can also request information on required and recommended equipment, nautical rules of the road, local safety and facilities on both coastal and inland waters.

Aquatic centers across the State also offer boating safety classes. Courses, costs and schedules vary. A list of aquatic centers can be found on the department's Website.

For further information, contact:

U.S. Coast Guard Auxiliary

California
1-800-869-SAIL
(1-800-869-7245)

Alameda
(510) 437-3308

Internet
www.cgaux.org

State of California
Resources Agency

Department of
Boating and Waterways

1-888-326-2822

Internet
www.dbw.ca.gov
www.boatsmarter.com

U.S. Power Squadrons

National Directory
(888) 367-8777

California
1-800-SEASKIL
(1-800-732-7545)

Internet
www.usps.org